Nashville Digital Inclusion Needs Assessment

June 2021

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Scope and Purpose of Project

Although the COVID-19 pandemic magnified the challenge of the digital divide in Nashville and across the country, these issues have persisted for many years. Technology touches every part of our modern life, from cell phones to public services. As such, it is important to understand the challenges individuals and communities face in trying to access the digital services and resources they need.

In order to better understand the most effective ways to respond to these challenges, the Nashville Digital Inclusion Taskforce engaged a research team from the Peabody College of Education and Human Development to complete a comprehensive needs assessment as the basis for recommendations on digital inclusion and equity for the city of Nashville. The data for the report comes from interviews with local non-profit partners, focus groups with community members, and a city-wide quantitative survey. To facilitate discussion and feedback, we will provide two versions of the report – an abbreviated report focused on survey outcomes and the complete report with a more detailed analysis of both quantitative and qualitative data.

The [Digital Empowerment Community of Austin](#) defines digital inclusion as "the ability of individuals and groups to equally access and use information and communication technologies affordably, efficiently, and reliably along with digital training, resources, and skills needed to fully participate in a digital society." The Nashville Digital Inclusion task force takes this one step further. **Digital inclusion is the right of every person in Nashville, but especially those from underserved communities, to acquire the tools and information necessary to understand and participate in the dismantling of the systems of oppression that keep them from achieving their fullest potential and fulfilling their greatest aspirations.**

Other cities across the country have administered surveys to better understand the depth of the need, for example Austin's Digital Assessment and Seattle's Technology Access and Adoption Study. In its [Digital Inclusion Analysis of the Metro Nashville Resident Survey](#) (which contained three questions related to digital inclusion), Metro ITS wrote that "analysis of these available data points begs the need for a more detailed, citywide survey that is wholly focused on digital inclusion in order to produce better targeted focus on particular needs and areas of opportunity." Without an in-depth study, Nashville is lacking in critical information that could help identify pockets of highest need and develop solutions for achieving digital inclusion.

The needs assessment will help to guide this work. The goal of this data collection is to better understand the needs and resources available in different communities across the city and what needs are not being met because of the digital divide. The survey results will be publicly available in the Metro Open Data portal, as well as provided to Metro Government organizations and departments for use to inform approaches that maximize the impact of their funding. A link to the Executive Summary can be found [here](#).

About the Taskforce

Organized by Dr. Fallon Wilson of Black in Tech Nashville and Dr. Samantha Perez of the Nashville Area Chamber, the Digital Inclusion and Access Taskforce is a community-based, community-led taskforce focused on addressing the intersecting systemic racial, ethnic, and economic digital inequities found within Nashville's digital landscape to give everyone the means to succeed in today's society.

Metro Nashville Government has worked tirelessly to expand several opportunities for residents. Yet, so many Nashvillians are still excluded from full participation in online life, and thus excluded from the basic opportunities available to others. The Digital Inclusion and Access Taskforce seeks to be the outstretched arm of expanded impact in the community. Our goal is to ensure that these opportunities are accessible to the widest cross-section of our residents including youth, new Americans, unemployed, underemployed, poor and working class Nashvillians, people who have been recently incarcerated, seniors, and the medically fragile, with inclusiveness of all the various racial and ethnic communities represented in our city. Together, we can work to address the three major facets of digital inclusion: access, affordability, and adoption.

In the Fall of 2020, the Digital Inclusion and Access Taskforce created and launched a comprehensive plan to provide critical benchmarking through a citywide digital inclusion survey and qualitative data collection, with results and recommendations shared with various organizations working across the county to bridge the digital divide.

Overview of Digital Inclusion and Equity

Tennessee's workers, students, and families increasingly rely on the internet and digital devices in order to participate in everyday life. Yet, an estimated 37% of Tennesseans do not have home access to high-speed, broadband internet and many Tennesseans cannot afford broadband subscription services or the devices necessary to maintain access to high-quality internet (BroadbandSearch, 2021). Additionally, a lack of digital readiness and literacy poses lifelong consequences for Tennesseans across education levels, race, age, and socioeconomic levels. The COVID-19 pandemic has magnified this reality, increasing not only the "digital divide" between those who have internet access and those who do not, but also the ability to access critical physical and mental health resources. Although recent progress has been made, there is still a lot of work to be done in order to achieve digital equity and support digital inclusion at the state and local level.

Definitions of Digital Inclusion

Digital inclusion has no single fixed definition, however, one definition by the Institute of Museum and Library Services seems to be widely used among researchers (Caruso 2014; Reder 2015). According to the Institute of Museum and Library Services (IMLS), digital inclusion is "the ability of individuals and groups to access and use information and communication technologies" (Becker et al., 2012).

The National Digital Inclusion Alliance (NDIA), a community of digital inclusion practitioners and advocates, further specifies digital inclusion as "the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of information and communication technologies" (n.d.). Although definitions vary, the common underlying pursuit is that all individuals and groups should have access to and use of information and communication technologies. Further, both NDIA and IMLS state the multiple elements of digital inclusion. NDIA (Becker et al., 2012; Thompson et al., 2014) states there are five elements in it:

1. affordable, robust broadband internet service
1. internet-enabled devices that meet the needs of the user
2. access to digital literacy training
3. quality technical support
4. applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration

Digital inclusion has also been described as "encompass[ing] not only access to the Internet but also the availability of hardware and software; relevant content and services; and training for the digital literacy skills required for effective use of information and communication technologies"

(Thompson et al., 2014, p. 1). As such, fostering digital inclusion means ensuring that all individuals and groups have access to and use of ICT, especially by improving affordability and availability in the areas of internet services, devices, technical support, education on digital literacy, and more.

In the creation of the Australian Digital Inclusion Index, Wilson and colleagues (2019) add that it is important to understand people's beliefs and attitudes toward technology, as well as ways in which individuals use technology. These markers of digital ability are an important area for attention for those interested in improving digital inclusion.

Finally, digital adoption is a critical component of digital inclusion. The Digital Empowerment and Inclusion Working Group (DEI Working Group) of the Advisory Committee on Diversity and Digital Empowerment (ACDDE) notes that " 'digital adoption' to refers to: 1) adoption of broadband Internet service at home; 2) adoption of Internet-enabled devices that meet a user's needs; 3) participation in digital readiness, digital literacy, or other online skills training; and 4) use of applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration" (p. 2-3, June 2021).

Digital Inclusion vs. Digital Literacy

The definition of digital inclusion could be confused with that of digital literacy. According to American Library Association's Digital Literacy Task Force, digital literacy is "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (n.d.). Although both digital inclusion and digital literacy are defined as the ability to use information and communication technologies (ICT), the discourse around digital inclusion centers *community or group capacity and agency* in relation to ICT (Caruso, 2014), while digital literacy focuses on *individual knowledge and skill*s.

The term digital inclusion emerged as an alternative to the term digital divide. The term digital divide was widely criticized for describing access to ICT as a binary issue where there are only users and non-users (Thompson et al., 2014). Thus, the term digital inclusion has surfaced as a term that can better explain the gap between users and non-users, as well as the differences among individuals with new technologies and applications (Thompson et al., 2014; Reder, 2015).

Why Digital Inclusion Matters

In our increasingly digital economies, more and more services and resources are shifting to online spaces. As such, those without digital access may not be able to receive the services and resources that they need. Additionally, Nashville is experiencing high levels of tech growth with the 3rd highest percentage growth in tech jobs in the nation (Stephenson, 2021). Nashville had nearly 29,250 tech positions in 2020, up from 18,181 in 2010, with high tech employers like

Amazon and Oracle leading the way. Digital inclusion efforts ensure that all Nashvillians are able to benefit from increases in the tech sector.

Digital Inclusion Across the Lifespan

A focus on access—or the "haves" and "have nots," of broadband and adequate devices—is not enough for digital inclusion. Without universal digital literacy and skills, the efficacy of broadband adoption and device access-based approaches to digital inclusion are limited. This extends past classroom and school boundaries to all Nashvillians, regardless of who they are, what age they are, and where they live.

Overwhelmingly, use of technology, including digital processes and communication, influences daily experiences, as well as one's opportunities to learn, work, and maintain a healthy lifestyle. A key aspect of active participation in the digital world, however, relies on one's ability to *successfully* and *safely* navigate the internet; being digitally literate or able to navigate and interpret the digital world is key. That said, over 70 million Americans are not "digitally ready" for robust online use; this is nearly twice the number of Americans with no online access (Horrigan, 2014). Only 1 in every 3 Americans have high levels of digital skills, with the majority exhibiting moderate and low digital skills (42% and 29%, respectively) (Horrigan, 2014). While broadband access, digital literacy, and device ownership needs persist across the lifespan, different age groups have different needs when it comes to digital inclusion.

School-age, Young Children
According to a recent Pew Research Center survey, most 37% of American adults believe K-12 schools have a responsibility to provide all students with laptops or tablet computers for schoolwork purposes, especially when it comes to low-income students who cannot afford these devices otherwise (Vogels et al., 2020). Despite the introduction of 1-to-1 device programs, school districts spending significant amounts of money on devices and software actually increases the digital access gap, as new technologies can create barriers for low-income students who do not have stable or consistent internet access at home (Davis, 2019). New software also creates significant learning curves for everyone involved, presenting the need for digital literacy.

School-age children without home internet face challenges related to student participation and engagement in the classroom and struggle with homework completion, while their peers who do have home internet access consistently score higher in core subjects (e.g., reading, math, and science) (NCES, 2018). Specifically, lack of device access disproportionately affects low-income students, as only 70% of children living in under-resourced households (below the federal poverty threshold) have a device other than a smartphone, compared to 92% of children in households at higher income levels (NEA, 2020). Further, Pew Research Center investigation found that nearly 1 in 5 teens are not always able to finish their homework due to lack of dependable computers and internet connections; Black and Hispanic teens are disproportionately

affected by this gap (Anderson & Perrin, 2018). Overall, digital literacy skills influence learning and post-school success and yet, are not systematically prioritized in school curriculum.

While school-age children are only one group affected by a lack of internet-capable devices, focusing on the disparities faced by this sub-population paints a more complete picture of the lifelong consequences of inadequate device access. For more than 300,000 school-age Tennesseans (approx. 30%) without full access to the internet, having "mobile only" internet access or inconsistent access to a connected computer puts them at greater risk of falling behind academically (Mangrum, 2019). Prior to the pandemic, school and public libraries served as critical mechanisms for access to technology and the internet, filling a need unmet by home access (Schuck et al., 2017). However, reliance on public WiFi and community hotspots ignores critical inequalities, and further neglects acknowledging that at-home devices for accessing the internet and completing schoolwork is also essential.

College-age,Young Adults
Most people would not suspect college-age students to lack digital literacy and skills, especially given the fact that most college students were born years after the initiation of the internet in 1991. However, the assumption that all young people (i.e., students) are "digital natives" simply because they were born into an increasingly digital world are equally widespread and misguided. These problematic narratives further the digital skills divide. (Kirshner & De Bruyckere, 2017). According to Goode (2010), "Narratives collected from [college] students demonstrate how powerful sociocultural influences, such as family practices and access to a quality K-12 education, contribute to the development of a technology identity… [and] highlight the role of schools and universities as institutions which are perpetuating – rather than resisting – inequalities associated with the digital divide" (p. 497). In other words, college-age students lack critical digital literacy skills necessary for future job prospects, in addition to completing their postsecondary learning.

Middle- and Working-age Adults
Digital literacy is vital for middle and working-age Americans, too. Yet, according to a digital knowledge quiz survey administered by Pew Research Center in 2019, the majority of U.S. adults can answer fewer than half the questions correctly on a digital knowledge quiz (Vogels & Anderson, 2019). Further, electronic health literacy, or the ability of individuals to use electronic tools in order to obtain health information, has been linked with improving quality of life (Filabadi et al., 2020). Dispelling the myth that not all jobs require digital skills, a 2017 report on the digital skills gap revealed that 82% of all middle-skill jobs require digital skills and that these jobs pay on average 17% more than non-digital roles (Bradley et al., 2015). Technology skills have also proven to have a competitive advantage across professions, especially for Black women (Benkarski, 2020). When it comes to Tennesseans, this digitization of the workforce includes online hiring among Tennessee businesses, requests for certain digital skills within job

positions, as well as the ability to conduct work remotely or online (ConnectedTN, 2013). As such, those without digital literacy skills risk their financial and physical wellbeing; these risks extend into late adulthood and beyond.

Older Adults and the Elderly
Older adults, including elderly individuals or those living in assisted living facilities and alone, are oftentimes left out of conversations about digital literacy, despite the internet's ability to connect them with resources, people, and other forms of social support and entertainment (Fields, 2019). One-third of adults ages 65 and older report never using the internet, while half do not even have internet access at home (Anderson & Perrin, 2017). Of older individuals who do use the internet, almost half report needing another person's help to set up or use a new digital device (Anderson & Perrin, 2017). As such, 34% of older internet users say they have little to no confidence in their ability to use electronic devices to perform online tasks (Anderson & Perrin, 2017), however, once seniors are online, they tend to engage at higher rates, suggesting a need for increased digital skills training (Livingston, 2019). In this regard, digital literacy skills are especially important for older generations, who sometimes express a lack of interest in technology (oftentimes due to fear or lack of comfort), as well are more likely to fall victim to internet scams and phishing, unknowingly putting their personal information at risk (Fields, 2019). Overall, digital literacy and skills play a key role in lifelong learning—including personal and professional learning—as well as in accessing digital health information and social connection opportunities that improve health, wealth, and wellbeing for individuals across their lifespan (Horrigan, 2016).

Tech Deserts and Racial Inequalities

Previous surveys reveal that there are communities that should be considered "tech deserts" - deep pockets of need and inequity when it comes to access to the internet and devices. According to data from Metro Nashville Information Technology Services (ITS), zip codes 37207, 37208, and 37211 see the largest number of residents without access to the internet by device (computer, tablet), phone or at home. These same communities, among others, also do not feel like they know how to use the internet to help when needing information.

The inequity of technological access in these communities is also compounded by other social factors. The three zip codes named previously also have significant populations of Black, Latinx, and immigrant families. A third of the priority schools in Metro Nashville Public Schools (MNPS) are in these three zip codes. Additionally, 37208 is also known for having the highest incarceration rate in all of the United States (2011).

In addition to these zip codes, more rural areas are also more likely to experience the lack of connectivity to the internet. For rural Tennesseans, access to sufficient, low-cost broadband internet is a persistent challenge. Nearly one in every four Tennesseans in rural communities live

where broadband services for this essential infrastructure are not yet available (FCC, 2020). This particular barrier with reliable access to technology was illustrated in our focus group discussion with the Joleton group, an unincorporated community in Davidson and Cheatham counties experiencing lack of access due to their remote location and geographic barriers.

As mentioned, there is an intersection within tech deserts of race, ethnicity, and socioeconomic status. According to data from the United States Census Bureau, Blacks and Latinos are much less likely to have access to home computers than are white, non-Latinos (42.0% and 41.8% compared to 66.3%). Where age and race are concerned, less than one half of all black and Latino school-age children have access to a home computer, and approximately 1 out of 4 use the internet at home (compared to 83.6% and 55.2% of white, non-Latino children). It is important to note that ethnic and racial disparities in-home computer and Internet use rates are larger for children than for adults.

Evident disparities in lack of access have fueled a lack of diverse representation in computer and mathematics fields (C&M). In addition to preventing economic, educational, and political advancements for these groups that may depend on access to computers, the internet, and broadband technology. According to a report published by the Brookings institute in 2018, Blacks make up 11.9% of all workers but only 7.9% of C&M workers. The gap is even more significant for Hispanics, who make up 16.7% of all workers but only 6.8% of C&M workers. Nationwide, the diversity picture is bleak, with Black representation in C&M occupations slipping from 8.1% of the field in 2002 to 7.9% in 2016 (Muro et al., 2018). In these fields, 49 and 43 of the United States' largest metro areas (cities like Nashville and Memphis) have seen Black and Hispanics' representation in these fields decline since 2010.

It is important to note, however, that there are bright spots in digital inclusion, often marked by a longstanding diverse presence in certain regions. It is clear that tech deserts stem from racial and economic inequities in access to digital technologies and that if these barriers to access persist, so too will the underrepresentation of minoritized individuals in computer and mathematics fields. However, what is also clear is that by recognizing these disparities we can combat them head-on. Community and company engagement with diverse populations at the entry-level of tech (in higher education sectors and company start-ups) are a clear first step to bridging the inclusion divide of access and beginning to enact real change. Change that can lead to a racially diverse presence in all levels of the tech sector. Addressing the ripple effect of the connections between race, socioeconomic status, and digital access will aid the Digital Inclusion and Access Taskforce in its endeavors to narrow the digital divide in Nashville.

English Language Learners and the Digital Divide

Prior to the emergence of Covid-19, English Language Learners (ELLs) in the United States faced a multitude of barriers relating to educational and employment-related success, including

low educational attainment, low socioeconomic status, societal hostility towards immigrants, and under-funded schools (Sugarman & Lazarín, 2020). However, as a result of Covid-19, these obstacles have been augmented and intersected with that of the digital divide (Billings & Lagunoff, 2020; Sugarman & Lazarín, 2020) especially as it relates to digital access, literacy, and privacy concerns. Importantly, almost 20% of residents in Davidson County are ELLs (Metropolitan Social Services, 2019).

According to Sugarman & Lazarín (2020), those most impacted by job displacement during the pandemic included immigrants, workers with lesser amounts of education, and Latinos—many of whom identified as an ELL. Subsequently, many lacked the means for home technology or internet access (McCollum, 2011; Sugarman & Lazarín, 2020). Moreover, past possible solutions, such as going to the public library or the local coffee shop, were no longer feasible due to government regulations and stay-at-home orders. Indeed, Billings & Lagunoff (2020) argued that there is a continual divide between non-ELLs and ELLs regarding digital access.

For those with digital access, digital literacy and privacy remained a concern. According to an analysis by the National Skills Coalition, over 40% of ELLs in the United States possessed limited or no digital competence (Bergson-Shilcock, 2020). However, it is important to note that the assessment completed by the participants was conducted in English. Therefore, it is possible that the resulting percentage is undervalued as ELLs process new information through at least two languages (i.e., their native language and English; Billings & Lagunoff, 2020) rather than just English. Furthermore, concerning digital privacy, many ELL-families in the United States are immigrants, some of whom may be unauthorized. Consequently, many ELL-families stress over the idea that their information may be given to United States Immigration and Customs Enforcement (ICE; Sugarman & Lazarín, 2020), especially due to the lack of knowledge regarding information privacy laws.

Lastly, recent research has further analyzed the digital divide through the context of elementary and secondary schools, showcasing disparities between technology's contribution for those who are native English speakers and ELLs. Indeed, embedded within the digital divide seems to exist a second level concerning the quality of time spent utilizing technology rather than the quantity (Altavilla, 2020). For instance, ELL students present in class may have been logged into the necessary application, but navigated impeding facets during class-time, such as low broadband and limited space for working and listening sans familial distractions. Some researchers also identified disparities between teaching quality towards non-ELLs and ELLs, as non-ELLs were instructed to complete high-level assignments, while ELLs accomplished rote memorization and vocabulary drilling techniques (Altavilla, 2020; Lacina, 2004; Warschauer et al., 2004).

The studies referenced here provide context for understanding the data from the current study. Many of the trends reported nationally and at the state level are also found here in Nashville.

Overview of Needs Assessment Methods

The data for this analysis were drawn from a mixed-method study that used interviews with nonprofit partners, focus groups with community members and a city-wide survey instrument to better understand digital equity and inclusion in Nashville. Copies of all protocols can be found in the appendices. Below is more detail on the data collected from various channels.

Quantitative Data Overview
(3,330 responses total)
- Targeted email, social media (public weblink)
  - 347 responses
- Random sample mailing
  - Number of invites: 5,000 mailed surveys
  - Number of completed responses: 1,020 (20% response rate)
- Targeted field canvassing, with particular focus on vulnerable populations such as underrepresented communities of color, people experiencing homelessness and residents of pre-identified zip codes (37207, 37208 and 37211)
  - Number of invites: 6,312
  - Number of completed responses: 1,963 (31% response rate)
  - A shortened version of the survey was created to increase the response rate from the field canvassing
- Translation was provided in the following languages: Arabic, Burmese, Kurdish, Somali, Spanish, and Vietnamese
- Given the length of the survey, missing data was an issue. However, to provide the most comprehensive analysis, all available data were included.

Qualitative Data Overview
(72 total participants)
- 46 interviews with nonprofit organizations
- 5 focus groups with targeted populations (26 participants total)

Quantitative Data

The main purpose of the survey is to understand the challenge of digital equity on a citywide level and to create a benchmark by which to measure future progress. As mentioned previously, there are a number of factors that contribute to digital equity and inclusion. In our analysis, we will share results and analysis of the following data:

1. Sample demographics
2. Access to internet and devices
3. Affordability

4. Beliefs and attitudes about technology
5. Internet usage
6. Technology skills and competencies
7. Technology aspirations

In this preliminary draft, we will examine questions by race/ethnicity, gender, age, and zip codes, as these were the categories identified as being of primary interest. Given the sample, certain identity categories were collapsed because of low sample size. At the same time, certain questions had a greater number of responses than others. For each question, we will calculate valid response rates. In an effort to balance between sample size and question response rates, the following categories were selected for in-depth analysis:

Race/Ethnicity: American Native/Indigenous; Asian; Black/African American; Hispanic/Latinx; White; Other; Bi- or Multi-Racial
Gender: Female; Male; Other (Gender nonbinary)
Age: Under 20; 20-29; 30-39; 40-49; 50-59; 60-69; and 70 and older
Zip codes: 37207, 37208 & 37211; all Others

Although groupings were created to capture as much variation as possible, it is important to note that some categories are relatively small compared to others. For Race/Ethnicity, it is important to note that the categories for American Native/Indigenous, Asian, and Other are small relative to the other categories. For Gender, the Other, or gender nonbinary, category is small relative to other groups. Finally, the under 20 group was relatively small compared to other Age groups.

Additional analysis of categories including sexual orientation, disability, language, housing, education, and income levels will be provided in the complete draft. A more comprehensive analysis of the quantitative data, looking at missing data and differences between samples, will also be presented in the complete report.

Because the survey was administered in multiple modalities, using a combination of probability and convenience samples, the results are best interpreted as offering an in-depth perspective of the perceptions and behaviors of Nashvillians with regard to technology.

Qualitative Data Collection

The qualitative data collection includes data from 46 in-depth interviews with nonprofit partners here in Nashville, as well as 5 focus groups with community members from technologically underserved communities.

The interviews were with nonprofit partners from a variety of sectors, including those that provided direct services as well as intermediary organizations. These organizations included

those that served youth and families, those that served older adults, those that served formerly incarcerated individuals, those that served immigrants and refugees, and those that served low-income individuals, among others. The protocol asked about the shift in the digital space and digital use since the beginning of the COVID-19 pandemic, the digital access needs of the communities they served, as well as about their understandings of digital literacy.

Interview participants consisted of 32 females and 12 males, with 1 participant identifying as non-binary and one selecting not to provide identification. When it comes to interviewee race and ethnicity, 22 participants identified as White, 13 identified as Black or African American, and 6 identified as Latino / Hispanic. The remaining participants identified as multiracial, Asian, Kurdish, or selected not to provide race or ethnicity information. Almost all participants denoted English as their preferred language. Participants were all over the age of 18 and were distributed through the following age ranges: 25-34 (7 participants), 35-44 (21 participants), 45-54 (12 participants), 55-64 (3 participants), 65-74 (1 participant). Two participants selected not to provide their age.

In addition to interviews, focus groups were held with the targeted population of these organizations. So far, 5 focus groups (including 26 participants in total) have been conducted, focusing on perspectives about digital inclusion and general community needs when it comes to digital access, skills, and aspirations. The five focus groups included participants who represent older adults, neighborhoods unable to get broadband services, and formerly incarcerated individuals. Additional focus groups are planned throughout the summer of 2021.

Focus group participants consisted of 20 females and 6 males, the majority of whom identified as Black or African American (14 participants), then White (12 participants). To maintain the confidentiality of focus group participants, additional demographic information was not collected.

Below are data from both quantitative and qualitative data analysis.

Data Analysis

Quantitative Data

Sample Demographics

To better analyze the survey data, it is important to first understand the sample demographics. Participants were asked to disclose information regarding their identity, personal and familial education level, and household-related information, such as the number of adults in the household and familial income. Participants were given a range of options that effectively compares to the demographic distribution of Nashville, TN, including that to not answer. Upon analysis, some demographics groups were combined in an "other" category to better analyze the data. However, the authors want to note that this was done purely for statistical reasons and that we acknowledge and honor all the different voices and experiences found in our communities.

The following tables illustrate the range of identities those in our sample held, as compared to the most recent demographic characteristics report by the Metropolitan Social Services of Davidson County, TN (2019). Gender identity and sexual identity were not specified in the Metropolitan Social Services and, thus, were not compared. It is also important to note that not all respondents answered each question, so sample sizes vary.

Table 1. Race and Ethnicity (N= 3001)

	Current Sample (%)	2019 ACS Data (%)
White	35.4%	63.0%
Black/African American	51.6%	27.1%
Hispanic/Latinx/Spanish Origin	5.0%	10.4%
Asian	1.4%	3.7%
American Native/ Indigenous	2.1%	<1%
Bi- or Multi-Racial	3.8%	2.4%
Other	0.7%	3.6%

*Note: The ACS Data set separated Race and Ethnicity, so the % reported here sums to over 100%.

Table 2. Gender Identity (N= 2876)

	Current Sample (n)	Current Sample (%)
Female	1512	52.6%
Male	1326	46.1%
Other	38	1.3%

*Other includes the following gender identities: Transgender (n=7), Genderqueer (n=12), Agender (n=5), and Gender Non-Binary (n=16). Participants also could select multiple categories.

Table 3. Sexual Identity (N= 2810)

	Current Sample (n)	Current Sample (%)
Heterosexual/Straight	2335	83.1%
Homosexual/Gay/Lesbian	84	3.0%
Bisexual	69	2.5%
Other	322	11.5%

*Other includes those who are Asexual (n=20) and those that selected multiple categories.

Table 4. Disability Status (N= 2932).

	Current Sample (n)	Current Sample (%)
None	2355	80.3%
A sensory impairment (visual or hearing)	82	2.8%
A learning disability (e.g., ADHD, dyslexia)	46	1.6%
A long-term medical illness	144	4.9%
A mobility impairment	60	2.0%
A mental health disorder	52	1.8%
A temporary impairment due to illness or Injury	18	0.6%
Multiple Disabilities	154	5.3%
Other	21	0.7%

*The Metropolitan Social Services report details a total of approximately 79,500 individuals in Davidson County with a disability, or approximately 11%.

As Table 1 shows, the race and ethnic composition of our sample are 35.4% White, 51.6% Black or African American, 5% Hispanic, Latinx, or Spanish origin, 2.1% American Native/ Indigenous, 1.4% Asian, 3.8% multi-racial, and 0.7% other. Overall, this distribution provides an oversampling of minority populations in order to better understand the digital divide in Nashville - as the literature suggests that those who identify as are non-White are more likely to be impacted by digital inequities (McCollum, 2011; Sugarman & Lazarín, 2020).

The gender and sexual identity distribution of the sample consisted of 52.6% females (46.1% males, 1.3% other) and 83.1% of participants self-identifying as heterosexual or straight (3.0% homosexual, gay, or lesbian, 2.5% bisexual, 11.5% other). A small number of participants identified as being Transgender, Genderqueer, Agender, or Gender Non-Binary, as well as Asexual. These groups were included in the "other" category since the small numbers precluded doing analysis for each group. Lastly, 19.7% of the sample reported having a disability.

Below are the reported ages, the total number of years the participant has lived in Nashville, TN, and educational attainment levels for both the participant and their parental figures.

Table 5. Age (N= 2855)

Age (Years-Old)	Current Sample (n)	Current Sample (%)
10-19	27	0.9%
20-29	414	14.5%
30-39	582	20.4%
40-49	593	20.8%
50-59	541	18.9%
60-69	413	14.5%
70+	285	10.0%

Table 6. Total Years in Nashville, TN (N= 2064)

Number of Years in Nashville	Current Sample (n)	Current Sample (%)
0-9 years	261	12.6%
10-19 years	336	16.3%
20-19 years	399	19.3%
30-39 years	351	17.0%
40-49 years	277	13.4%
50-59 years	227	11.0%
60-69 years	138	6.7%
70+ years	75	3.6%

Table 7. Educational Attainment

	Elementary or Middle School (%)	High School or GED/Equivalent (%)	Technical Certificate, 2-Year College Degree or Some College (%)	4-Year Undergraduate Degree (%)	Graduate or Professional Degree (%)	Prefer not to Answer (%)	Total (n)
Participant	19.1%	19.2%	16.5%	38.0%	6.0%	1.1%	3040
Mother/Guardian 1	9.6%	9.6%	9.6%	47.8%	9.6%	4.8%	2476
Father/Guardian 2	11.4%	14.5%	12.1%	43.4%	13.2%	5.5%	2636

Overall, most of the participants were middle-aged, ranging from ages 30- to 60-years-old. The majority of participants have lived in Nashville, TN between 10 and 50 years. Additionally, most of the participants reported that both they (38.0%) and their guardians (47.8% Guardian 1, 43.4% Guardian 2) received at least a 4-Year Undergraduate Degree.

Lastly, the following tables concern demographic characteristics pertaining to the home, such as Zip Code, language spoken, household size, income level, and housing status. Zip Codes were divided into two groups. Group 1 contains Zip Codes 37207 (Talbot's Corner), 37208 (North

Nashville), and 37211 (South Nashville). The remaining zip codes (Group 2) are noted under Table 8. These zip codes were grouped in this manner to highlight "high-need" communities that have previously been identified as underserved in order to compare them to all other zip codes.

Table 8. Zip Code (N=2306)

	Current Sample (n)	Current Sample (%)
37207, 37208 & 37211	524	22.7%
All other zip codes	1782	77.3%

*Zip Codes in Group 2 include 37013, 37014, 37015, 37019, 37027, 37035, 37036, 37037, 37042, 37043, 37048, 37060, 37064, 37066, 37067, 37072, 37073, 37075, 37076, 37080, 37085, 37086, 37087, 37091, 37115, 37116, 37122, 37127, 37128, 37129, 37130, 37135, 37138, 37167, 37172, 37179, 37189, 37201, 37202, 37203, 37204, 37205, 37206, 37209, 37210, 37212, 37214, 37215, 37216, 37217, 37218, 37219, 37220, 37221, 37222, 37228, 37229, 37240, 37252, 37294, 99999

Table 9. Language Spoken in Home (N = 2899)

Language	Current Sample (n)	Current Sample (%)
English	2783	96.0%
Spanish	79	2.7%
Arabic	5	0.2%
Vietnamese	2	0.1%
Other	4	0.1%
Prefer not to Answer	26	0.9%

'Other' languages include French (n=1), German (n=1), Serbian (n=1), and Turkish (n=1).

Table 10. Total Household Income (N=3034)

Income Amount	Current Sample (n)	Current Sample (%)
Under $30,000	1239	40.8%
$30,000 to $59,999	756	24.9%
$60,000 to $99,999	470	15.5%
$100,000 or More	390	12.9%
Prefer not to Answer	179	5.9%

Table 11. Do you have Stable Housing? (N=3119)

	Current Sample (n)	Current Sample (%)
Yes	2756	88.4%
No	358	11.5%
Prefer not to Answer	5	0.2%

Figure 1. Number of Adults in Household

Adults in Household
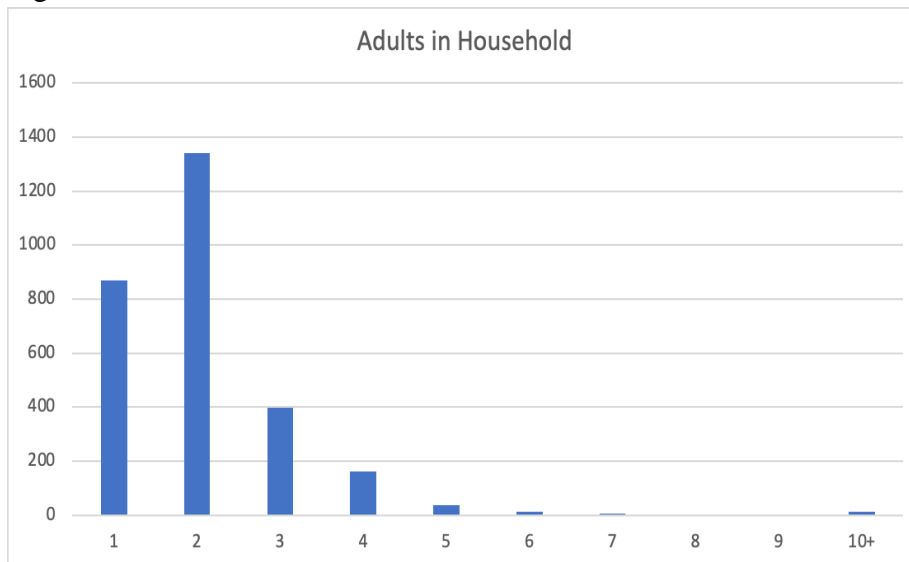
Figure 2. Number of Youth in Household

Youth in Household
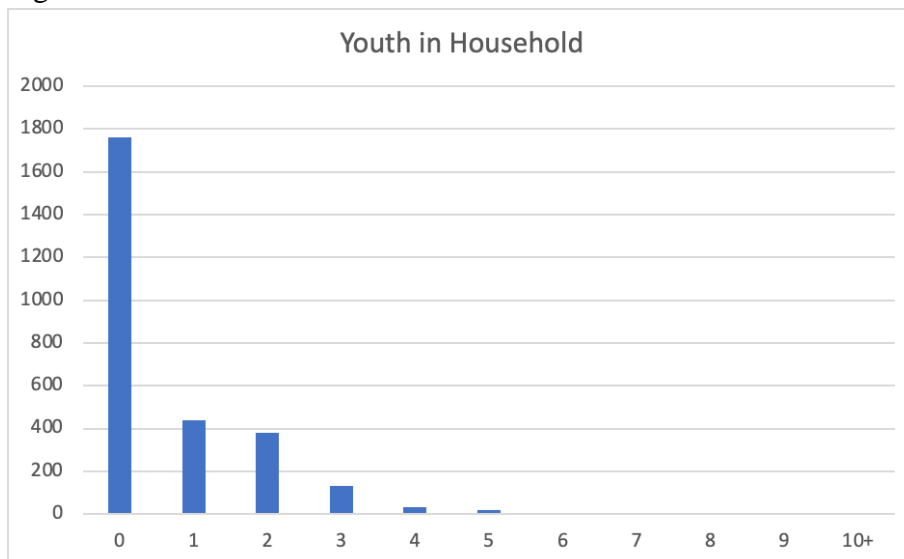
In general, about 7 out of 8 of the participants reported having stable housing with over half of those in the sample having a total income of $59,999 or less. This is congruent with the Metropolitan Social Services (2019) report of those in Davidson County. Furthermore, over three-quarters of the sample reside in a Zip Code that is not 37207 (Talbot's Corner), 37208 (North Nashville), or 37211. Almost all of the participants reported English as the most common language spoken in their home with Spanish being the second-most common. Again, this is comparable to the report by Metropolitan Social Services (2019). Respondents were also most likely to live in two person households with no youth - 47.1% of households had 2 adults, 30.6% had 1 adult; 63.3% of households had no youth in the home and the average household size was 2.8. According to the Metropolitan Social Services report, the average family size in Davidson County in 2018 was 3.03 and the average household size of 2.37, roughly matching the data in our sample.

It is important to note that the field canvassing sample intentionally oversampled from technologically underserved communities. This can most dramatically be seen in the percentage of respondents that do not have stable housing, where 335 of the 358 respondents (93.6%) came from the field canvassing sample. Similarly, 87.5% of those making under $30,000 were respondents from the field canvassing sample.

Access to internet and devices[1]

Access is a key component of digital inclusion and bridging the digital divide. There are several questions on the survey that address questions of access. We look at the following factors:
- **Access to devices** - how many and what types of devices are available to individuals, and if any devices are shared within households
- **Access to internet** - where people are accessing the internet, how many have home internet service, types of home internet service, and challenges with home internet service

In assessing the level of access to devices that the participants were asked questions such as:
- Number of *desktops* in the home?
- Number of *laptops* in the home?
- Number of *tablets* in the home?
- Number of *smartphones* in the home?
- Which, if any, of the devices in the home are *shared*?

Figure 2 below shows the percentages of different types of devices respondents had in their homes. Respondents were most likely to have smartphones (and multiple smartphones), and least likely to have desktops in households. Overall, 56.1% of individuals who participated in the study reported not having any desktops in the home, while 34.8% and 33.8% of participants reported not having a laptop or a tablet in the home, respectively.

Figure 3. Devices by Type in Households
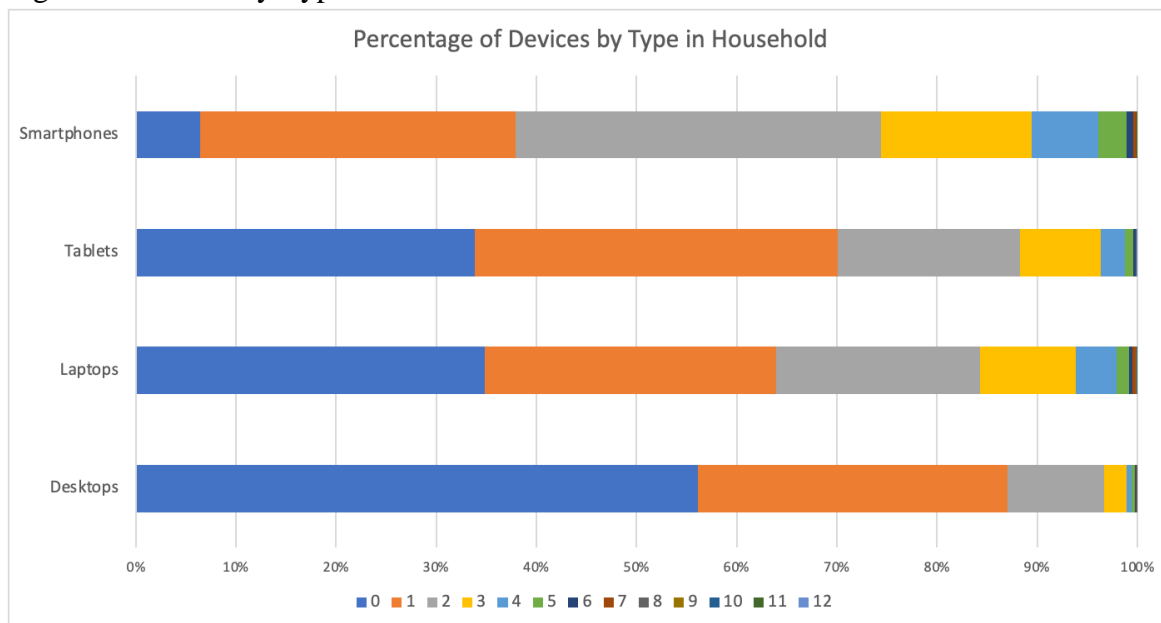
22

Only 6.4% of participants reported not having access to any smartphone in the home. Additionally, respondents were more likely to have multiple smartphones in the home as well, with 62.1% of households having 2 or more smartphones in the home.

Table 12. Devices by Type in Households

No. in Home	Desktops (N=2585)	Laptops (N=2733)	Tablets (N=2710)	Smartphones (N=2841)
0	56.1%	34.8%	33.8%	6.4%
1	30.9%	29.1%	36.2%	31.5%
2	9.6%	20.4%	18.2%	36.5%
3	2.2%	9.5%	8.1%	15.0%
4	0.5%	4.1%	2.4%	6.7%
5	0.3%	1.3%	0.8%	2.8%
6	0.1%	0.3%	0.2%	0.7%
7	0.0%	0.3%	0.0%	0.3%
8	0.0%	0.0%	0.0%	0.1%
9	0.0%	0.1%	0.0%	0.0%
10	0.0%	0.0%	0.0%	0.0%

In looking at Race/Ethnicity, Black and Indigenous respondents had the highest percentage of respondents reporting having zero of all types of devices - though the types of devices they had followed overall trends (i.e., least likely to have desktops, most likely to have smartphones). White respondents had the highest percentage of respondents reporting having desktops, laptops, and tablets, while Hispanic/Latinx respondents had the highest percentage of respondents having smartphones (and multiple smartphones) in the household, with 80.2% of respondents having two or more smartphones in the home. Older adults had higher percentages of those with desktops (60.2% of those 70 and over had at least one desktop) and younger age groups had higher percentages of those with smartphones, while working age adults had higher percentages of those with laptops and tablets.

In thinking about access, it is also important to understand whether or not devices are shared within households. Overall, 20.3% (N=2789) of participants reported sharing devices, with

laptops being most likely to be shared and smartphones being least likely to be shared. Asian respondents were most likely to report sharing devices (35.0% reporting Yes), while Black (14.1%) and Indigenous (6.9%) respondents had the lowest percentage of shared devices - though they also had the lowest number of devices overall as well.

In assessing the level of access to the internet that the participants were asked questions such as:
- Do you use the internet?
- If not, why do you not use the internet?
- If you use the internet, where do you access the internet?
- Do you have home internet services?
- What types of services do you have, and what is the quality of those services?

We first asked if individuals used the internet. 18.3% (N=3052) of respondents reported that they did not use the internet on any device. In thinking about those that did not use the internet, we wanted to better understand the demographics of this group. The largest difference could be seen in those without stable housing, as seen in Table 13. Of those without stable housing, 75.1% of respondents also did not use the internet, compared with 10.7% of those with stable housing that did not use the internet. Another large difference was by zip code - 21.6% of those in the 37207, 37208 & 37211 zip codes reported not using the internet, compared to 8.4% in other zip codes. Indigenous respondents (38.1%), Males (23.7%), and those 30-39 years old (20.0%), were also more likely to not use the internet in their respective categories.

Table 13. Crosstab of Internet Use and Stable Housing

		Stable Housing		
		Yes	No	Total
Internet Use (Y/N)	Yes	2364	86	2450
	No	283	259	542
Total		2547	345	2992

We also wanted to understand reasons why people might not use the internet. When investigating reasons that participants may not use the internet, we asked them to respond with their level of agreement with possible reasons via a Likert scale to the options listed below:

Table 14. Reasons why respondents do NOT use the Internet

	Total N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Internet too expensive	473	12.7%	2.3%	9.3%	14.6%	61.1%
Concerns about safety and privacy	472	27.3%	6.6%	13.8%	14.8%	37.5%
Not interested and don't need	470	26.2%	6.2%	12.6%	12.6%	42.6%
Someone will do it for me	227	28.2%	10.6%	12.3%	7.5%	41.4%
No one to teach me	470	38.7%	6.8%	11.1%	10.6%	32.8%
Language barriers make it difficult	470	77.4%	3.2%	5.3%	2.6%	11.5%
Device too old or broken	471	43.1%	4.9%	14.4%	10.2%	27.4%
Internet too difficult	469	35.8%	5.8%	11.9%	12.6%	33.9%

To start, 75.7% of participants Agreed or Strongly Agreed that the greatest barrier they faced to using the internet was that the internet was too expensive. Next, 55.1% Agreed or Strongly Agreed of participants were not interested in using the internet, while 52.3% Agreed or Strongly Agreed of participants worried about their safety and privacy. Participants indicated the lowest level barrier they were facing in their use of the internet were language barriers, at 14.1% Agreed or Strongly Agreed. In our analysis we wanted to see how these barriers impacted individuals based on Race/Ethnicity, Gender, Age, and Zip Codes of interest. From this analysis the most noteworthy finding arose from comparing Race/Ethnicity and Age with barriers to internet use.

In looking at the reasons why individuals did not use the internet by demographic categories, it is important to note that many of the sample sizes for particular groups were quite low, as responses to each of these questions were less than N=500. This was especially true for Race/Ethnicity.

For those that did use the internet, we asked about the frequency of accessing the internet in particular locations. The results can be seen in Figure 3 and Table 15 below. In analyzing the frequency of where the internet is accessed, the most interesting pattern was found in the percentage rates of daily use. The highest percentage rates of Daily use included using one's own High Speed Internet or Dial-up (81.4%) or Using a Data Plan on a Mobile Phone (67%), followed closely by daily internet use At Work (52.8%). These responses indicate that the most reliable internet access for participants is connected to the home or place of work.

Many respondents also indicated that they did not have access to the internet in colleges or schools (65.1%) or work (32.5%). Interestingly, people also felt that they did not have access to the internet in public spaces like libraries (30.8%) or parks (28.0%). These responses could be skewed by the effects of COVID-19 on the accessibility of public internet during this past year.

Figure 4. Frequency of where internet is accessed
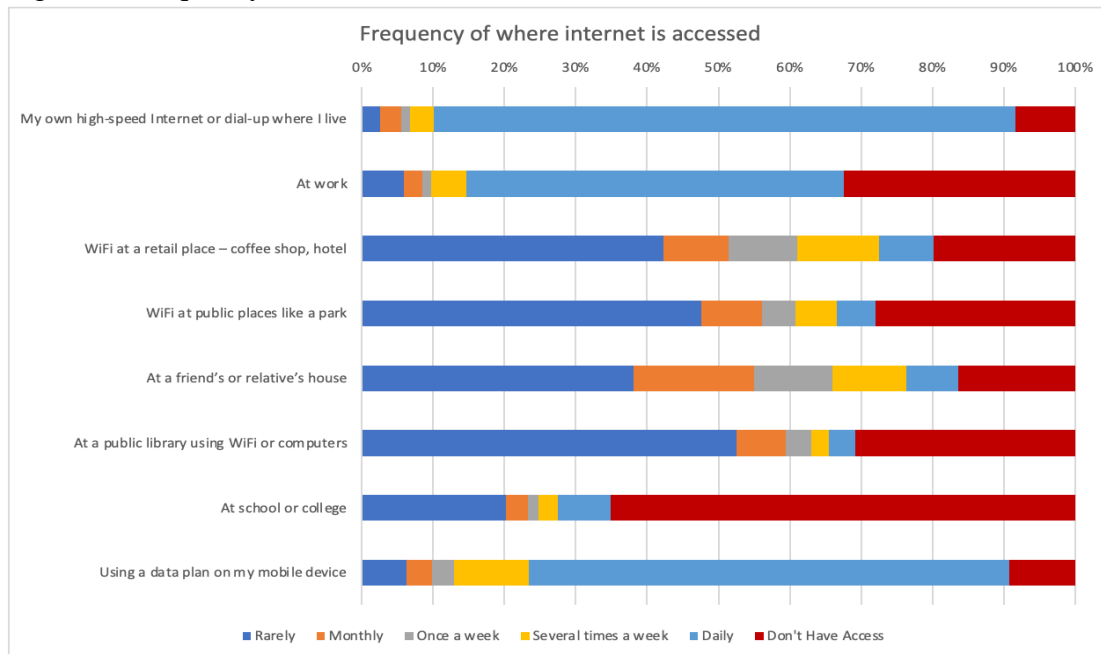
Table 15. Frequency of where internet is accessed

	Total N	Rarely	Monthly	Once a week	Several times a week	Daily	Don't Have Access
My own high-speed Internet or dial-up where I live	1922	2.6%	3.0%	1.2%	3.3%	81.4%	8.4%
At work	1913	5.9%	2.7%	1.2%	5.0%	52.8%	32.5%
WiFi at a retail place – coffee shop, hotel	1901	42.2%	9.2%	9.6%	11.5%	7.6%	19.8%
WiFi at public places like a park	1901	47.6%	8.5%	4.6%	5.8%	5.4%	28.0%
At a friend's or relative's house	1904	38.1%	16.9%	11.0%	10.3%	7.4%	16.3%
At a public library using WiFi or computers	1893	52.6%	6.8%	3.6%	2.5%	3.8%	30.8%
At school or college	1887	20.2%	3.1%	1.5%	2.7%	7.4%	65.1%
Using a data plan on my mobile	1886	6.3%	3.6%	3.0%	10.5%	67.4%	9.2%

In general, the overall patterns discussed above were also seen by Gender, Race/Ethnicity, Age and Zip Code - that is, most people reported most frequently accessing the internet at home or at work. In terms of gender identification, Males report accessing the internet less slightly frequently at work (51.7% reported doing so Daily compared 57.2% for Females), but more frequently at both retail and other public places than Females or nonbinary or individuals identifying with another gender category. Similarly, in terms of Race/Ethnicity, Black respondents reported less frequently accessing the internet at work compared to other groups (43.8% doing so daily) and more frequently accessing the internet in public spaces than other racial and ethnic groups. Working age individuals had the highest frequency of accessing the internet at work, while younger individuals were more likely to report high frequencies of accessing the internet at a school or college, as well as in a friend or relative's home. In terms of Zip Code, those in the 37027, 37028, and 37211 areas less frequently accessed the internet at work compared to other groups.

We then asked if individuals had internet access in their homes. 81.5% (N=1979) of respondents reported Yes, they did have home internet service; 14.6% reporting No; and 3.8% reporting they Don't Know.

In an effort to measure the variety and availability of internet service types available to participants we posed this question of what types of internet service was available in the places where you lived. Responses can be seen in Table 16 below:

Table 16. Internet service types available

	Available
Dial-up service	1.6%
DSL	4.5%
Cable modem service	34.7%
Fiber-optic service	14.9%
Satellite Internet service	3.2%
High-speed Internet plan for a computer or cell phone	33.3%
Other	1.0%
Don't know	6.7%

This data indicates that most participants have access to cable modem service (at 34.7%) and/or a High-Speed Internet plan for a computer or cell phone (at 33.3%).

For those with home internet service, the most frequent issue reported was slow or no access in certain rooms, with 47.2% reporting experiencing slow or no access in certain rooms at least Monthly. Slow or no access in certain rooms also had the highest percentage occurring on a Daily basis at 11.1%. Dropped internet connections was the next most frequent issue, with 37.7% reporting experiencing this challenge at least once monthly, though that occurred on a less frequent basis.

Figure 5. Overall Frequency of issues with home internet
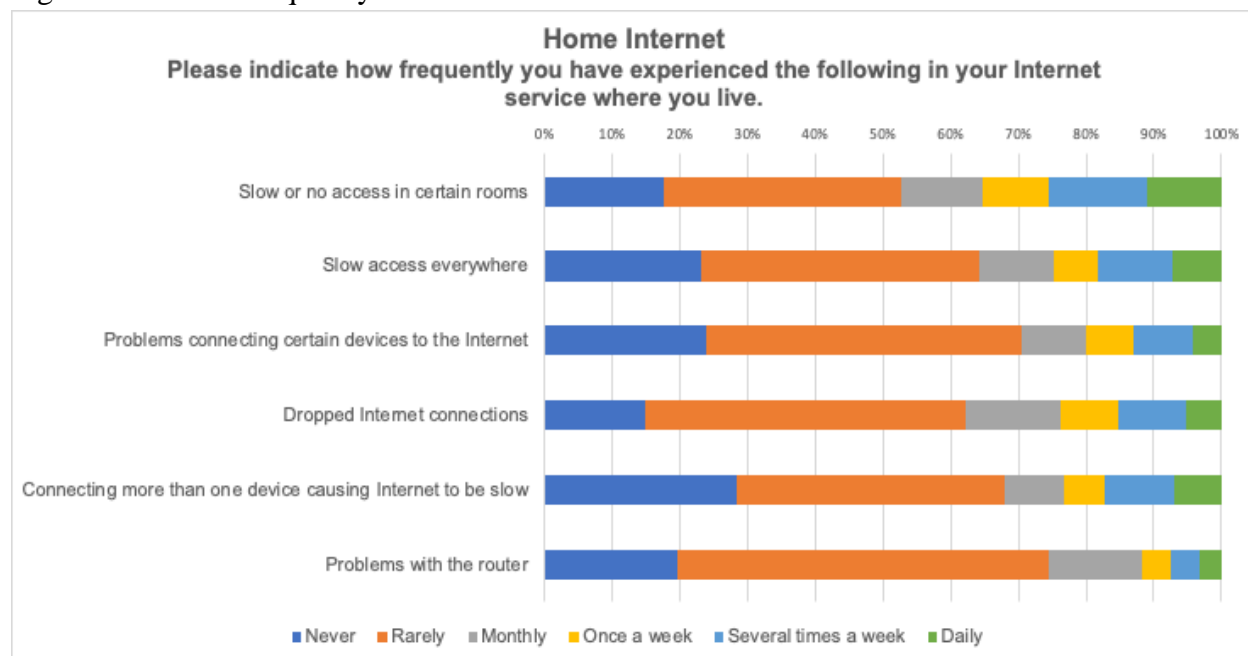
Table 17. Frequency of issues with home internet

	Total Valid N	Never	Rarely	Monthly	Once a week	Several times a week	Daily
Slow or no access in certain rooms	1591	17.7%	35.1%	11.9%	9.7%	14.5%	11.1%
Slow access everywhere	1396	23.2%	40.9%	11.0%	6.7%	11.0%	7.2%
Problems connecting certain devices to the Internet	1401	23.9%	46.5%	9.7%	7.0%	8.7%	4.2%
Dropped Internet connections	1559	15.0%	47.3%	13.9%	8.5%	10.1%	5.2%
Connecting more than one device causing Internet to be slow	1516	28.5%	39.4%	8.8%	6.1%	10.2%	7.0%
Problems with the router	1542	19.7%	54.7%	13.7%	4.4%	4.1%	3.3%

In looking at challenges to home internet connections by Gender, Males tend to report less frequent issues with internet connectivity than Females or gender nonbinary or individuals from other categories. This can be best seen in slow or no access in certain rooms where 61.4% of Males report Rarely or Never experiencing this challenge, compared to 47.4% of Females and 39.4% of gender nonbinary and other gender category respondents (report Rarely or Never experiencing this challenge), though the trend is consistent across the different types of internet issues.

In terms of Race/Ethnicity, Hispanic/Latinx individuals tended to report less frequent challenges to home internet access than other groups, as seen in Figure 6 below on Slow or no access to the internet by Race/Ethnicity, where 63.7% of report Rarely or Never experiencing this challenge, as compared with 50.3% of White and 54.7% of Black respondents. However, it should be noted that 19.2% of Hispanic/Latinx, 22.1% of Black, and 27.8% of White still report this issue daily or several times a week, along with 33.4% of Bi- and Multi-racial respondents (Note: the Other category had 50% responding this was an issue at least several times a week, but had a very small sample size for this question).

Figure 6. Slow or no access in certain rooms by Race/Ethnicity

Slow or no access in certain rooms

Legend: ■ Never ■ Rarely ■ Monthly ■ Once a week ■ Several times a week ■ Daily

Categories (top to bottom): American Native/Indigenous, Asian, Black/African American, Hispanic/Latinex, White, Other, Bi- or Multi-racial
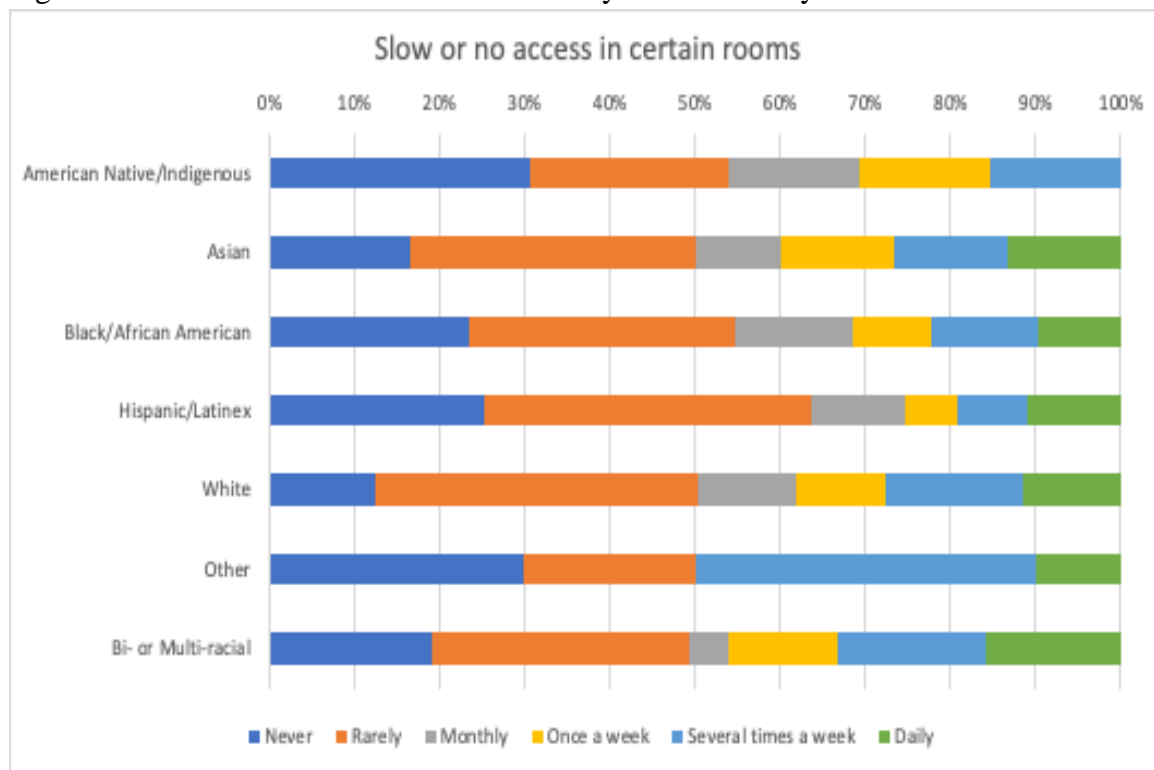
In terms of age, people who were 20-29 year olds tended to report the highest frequency of challenges with home internet services, with the reported frequency of challenges tapering off in the higher age groups. 54.1% of 20-29 year olds reported experiencing Slow or no internet service in certain rooms at least Monthly; the same was true for only 39.1% of adults over the age of 70.

In terms of zip code, there was very little difference between the two groups, though those in the 37207, 37208, and 37211 zip codes were less likely to report issues in each category compared to other zip codes - except for connecting more than one device causing the internet to be slow. In this category, 34% in the 37207, 37208, and 37211 zip codes reported experiencing slow connection Monthly or more frequently compared to 32% in other zip codes.

Key Take-aways about Access:

Devices:
- Respondents were most likely to have smartphones (and multiple smartphones) and least likely to have desktops in households. This trend was seen across different demographic categories.
- Black and Indigenous respondents had the highest percentage of those reporting having zero of all types of devices - though the types of devices they had followed overall trends (i.e, less likely to have desktops, most likely to have smartphones).
- White respondents had the highest percentage of those reporting having desktops, laptops, and tablets; Hispanic/Latinx respondents had the highest percentage of those having smartphones in the household.
- Importantly, 20.3% of participants reported sharing devices. Of the devices that were shared, laptops were most likely to be shared, while smartphones were the least likely to be shared.
- Asian respondents were most likely to report sharing devices, while Black and Indigenous respondents had the lowest percentage of shared devices reported.
- Older adults are more likely to have desktops, younger age groups are more likely to have smartphones, and working age adults are most likely to have laptops and tablets.

Internet:
- Notably, 18.3% of respondents report not using the Internet at all.
  - The cost of internet services was the most reported reason for not using the Internet (75.7% Agreed or Strongly Agreed).
- For those that did use the internet, respondents most frequently accessed the internet at home, on mobile devices with data plans, or at work - doing so daily or several times a week.
- Of note, 81.5% of respondents report having home internet access, while 14.6% reported not having home internet access.
  - The most common types of available service were cable modem service (34.7%) and high speed internet plan for a computer or cell phone (33.3%)
  - The most common issues with home internet are slow or no access in certain rooms, dropped internet connections, and slow service from connecting multiple devices.

Affordability [2]

Affordability is another key component of digital inclusion. The survey explored a few different questions related to affordability, including:

- How much would you be willing to pay monthly for a high-speed Internet connection?
- How much do you actually pay per month for internet service?
- Have you ever been charged extra for going over your data limit for internet service?
- What low-cost internet providers are you aware of?
- If there was a way to reduce or eliminate your cost for the internet through a government program, would you sign up for it?
- Beliefs about internet affordability, including whether respondents agree that:
    - The cost of high-speed internet service is too high for me.
    - I feel like I am always searching for free WiFi.
    - The government should cover the cost of high-speed internet, annually, for people who can't afford it.

We first asked individuals how much they would be willing to pay for internet services. The majority of respondents wanted to pay $10 or less (46.4%), with only 20.8% of people willing to pay $36 or more for home internet service. However, when asked how much individuals actually pay for home internet service, we see that 67.4% of people actually pay $51 or more - highlighting the gap between how much Nashvillians want to pay per month for internet service versus how much they actually pay. In addition, when asked if they have ever been charged extra for going over the data limit for internet service, 32.3% of respondents said Yes, 54.9% said No, and 12.8% replied Don't Know (N=1728), providing insight into an often hidden cost of internet access. It is also important to remember that the main reason cited for not using the internet at all was because the internet is too expensive (see Table 14 on page 24).

Table 18. How much would you be willing to pay for home internet service

	Total N	Percent
$10 or under	471	46.4%
$11-$20	194	19.1%
$21-$35	140	13.8%
$36-$50	119	11.7%
$51 or more	92	9.1%
Total	1016	100.0%

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[2] Because of the length of the survey, certain questions were omitted to increase the response rate in the field work data collection. In this section, question 19 was omitted in the shortened survey.

Table 19. How much do you actually pay for home internet service

	Total N	Percent
$10 or under	91	6.3%
$11-$20	41	2.9%
$21-$35	65	4.5%
$36-$50	272	18.9%
$51 or more	969	67.4%
Total	1438	100.0%

The difference between what people want to pay and what they actually pay is found among all demographic categories (race, gender, age, and zip code). A link to the complete set of tables and figures can be found in the Appendix E. In looking at Race/Ethnicity, more American Native/Indigenous, Black/African American, and Bi- or Multi- Racial Nashvillians responded that they wanted to pay $20 or less (the combined percentage of those who opted for $10 or less and $11-20 are 69% for each group) than Nashvillians in other racial/ethnic other groups; however, these groups actually paid more for internet service - with the majority of all three groups paying $36 or more. White (77.7%) and Asian (76.7%) respondents were most likely to pay $51 or more compared to other groups.

Males were more likely to state that they wanted to pay $10 or less (58.3%), while those that were gender non-binary were most likely to pay $51 or more (75.9%). Older adults also wanted to pay less - 56.7% of 60-69 year olds and 60.0% of those 70 and older wanted to pay less than $10 per month. By contrast, working age adults were most likely to actually pay $51 or more, with 30-39 year olds having the highest percentage at that cost point at 73.0%. In terms of zip code, 61.6% of the respondents living in zip codes 37207, 37208, and 37211 indicated that they would be willing to pay $10 or less per month for a high-speed internet connection where they live, compared to 38.0% in Other zip codes. However, over half of the respondents from the three zip code areas (56.3%) are actually paying $51 or more, though that is less than the 72.4% of those in other zip codes who indicated that they pay $51 or more.

Asian respondents had the highest percentage of those reporting being charged for going over data limits compared to other racial/ethnic groups, at 40.0%. In terms of gender, those that are gender non-binary were most likely to report being charged (40.0%), compared to female (35.6%) and males (28.8%). Those under 20 had the highest percentage by age group in being charged for going over their data limit at 52.9%. The residents living in the three zip code areas

(27.4%) were less likely to have been charged extra for going over their data limit for internet service compared to those in other zip codes (34.1%).

In thinking further about affordability, we asked respondents about their awareness of a number of low cost providers. Table 20 below provides an overall view of the responses.

Table 20. Awareness of Low-cost Options

	Total N	Percent
None	1985	62.5%
Lifeline	110	3.5%
E-Rate	6	0.2%
Emergency Broadband Benefit	15	0.5%
Comcast Internet Essentials	258	8.1%
Verizon Fios	32	1.0%
AT&T Internet Basic	197	6.2%
Spectrum Internet Assist	24	0.8%
Multiple low-cost options	550	17.3%
Total	3177	100%

Overall, 62.5% of the sample did not indicate that they knew of any low-cost providers. Of the providers that respondents knew about, Comcast Internet Essentials and AT&T Internet Basic were the two most recognized programs. Interestingly, 17.3% of respondents also indicated that they knew about multiple low-cost providers, including Comcast and AT&T. In terms of Race/Ethnicity, the Other category, though small, had the highest percentage of those recognizing at least one low cost provider at 59.1%, followed by Hispanic/Latinx respondents at 49.7%. Similarly, those that are gender nonbinary had the highest level of recognition, with 52.6% recognizing at least one provider. Interestingly, those 70 and older had the highest recognition by age group, with 53.3% recognizing at least one low-cost provider. There was very little difference in recognition of low-cost providers by zip code.

We also asked respondents, *If there was a way to reduce or eliminate your cost for the Internet through a government program, would you sign up for it?* Overall, 79.7% of the respondents indicated Yes, they would sign up for such a service, with 20.3% indicating No. In terms of Race/Ethnicity, Asians were the group that were least likely to sign up compared to other groups, with 34.6% indicating that they would not sign up. American Native/Indigenous (86.1%), Other

(84.6%), and Bi- or Multi-Racial (86.7%) groups were most likely to sign up for such a program. 83.8% of Females responded that they would sign up for such a program, compared to 80.6% of Males, and 70.8% of gender non-binary respondents. Interestingly, those under 20 were least likely to sign up for such a program, with 60% indicating No. This may be because of the need for parental permission. 30-39 year olds had the highest percentage willing to sign up for such a program at 86.2%. Those in the 37207, 37208 & 37211 were more likely to sign up for the program at 84.4%, compared to 76.8% in other zip codes.

Finally, we asked about beliefs related to internet affordability, including: 1) *The cost of high-speed internet service from a cable or phone company is too high for me*; 2) *I feel like I am always searching for free WiFi*; and 3) *The government should cover the cost of high-speed internet, annually, for people who can't afford it.* Table 21 and Figure 7 provide a view of overall responses.

Table 21. Beliefs about Internet Affordability

	Total N	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
The cost of high-speed Internet service from a cable or phone company is too high for me.	1841	7.7%	12.9%	23.7%	21.8%	33.9%
I feel like I am always searching for free WiFi.	1790	33.7%	26.6%	20.6%	7.9%	11.2%
The government should cover the cost of high-speed internet, annually, for people who can't afford it.	1607	11.1%	9.8%	17.9%	21.4%	39.7%

Figure 7. Beliefs about Internet Affordability

Beliefs about Internet Affordability
Please rate your level of agreement with the following statements on a scale of 5 to 1, where 5 means "strongly agree," and 1 means "strongly disagree."
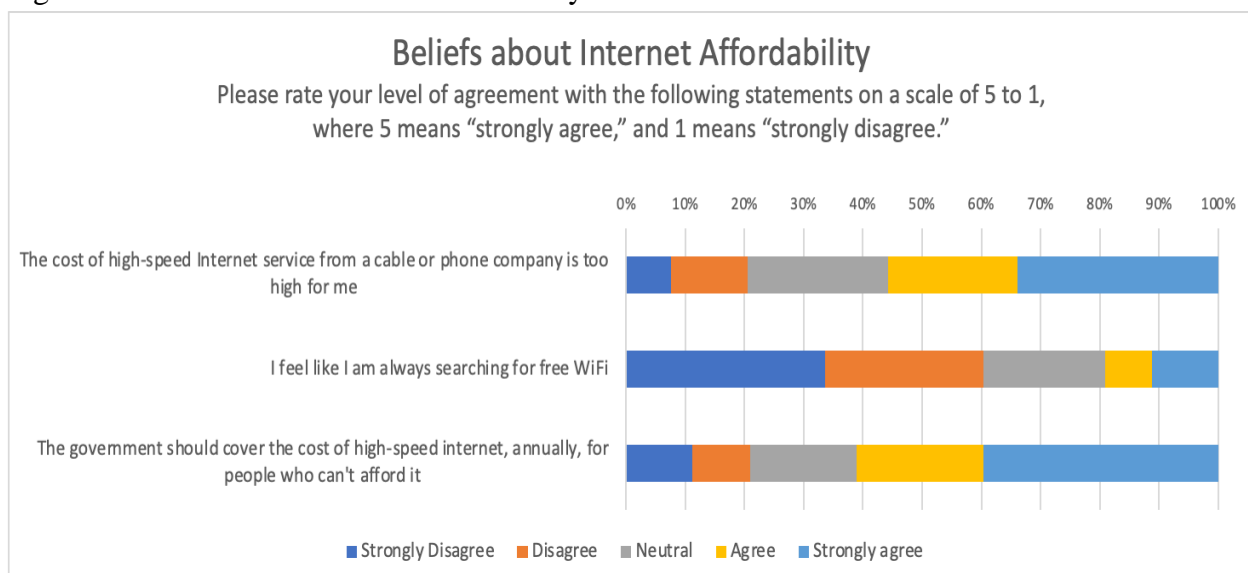
Overall, 55.7% (Agreed or Strongly Agreed) of respondents agreed that the cost of internet service is too high, 19.1% (Agreed or Strongly Agreed) feel they are always searching for free wifi, and 61.1% (Agreed or Strongly Agreed) that the government should cover the cost of internet for those who cannot afford it.

Across racial and ethnic groups, American Native/Indigenous respondents were most likely to believe that the cost of high-speed internet service from a cable or phone company is too high for them (75.0% Agreed or Strongly Agreed), that they feel like they are always searching for free WiFi (40.6% Agreed or Strongly Agreed), and that the government should cover the cost of high-speed internet, annually, for people who can't afford it (84.0% of the American Native/Indigenous group Agreed or Strongly Agreed). There was little difference in the belief that the cost of high-speed internet is too high or that one is always searching for internet by gender. However, female (67.4% Agreed or Strongly Agreed) and gender non-binary (67.8% Agreed or Strongly Agreed) respondents were more likely than male respondents (54.4% Agreed or Strongly Agreed) to believe that the government should cover the cost of high-speed internet, annually, for people who can't afford it. Similarly, there was little difference in the first two beliefs by zip code, though respondents from the three zip code areas were more likely to believe that the government should cover the cost of high-speed internet, annually, for people who can't afford it (67.5% of high-need zip codes Agreed or Strongly Agreed compared to 58.3% from other zip codes).

In terms of age, the belief that the cost of high-speed internet is too high (Agreed or Strongly Agreed) goes up slightly by age with the highest percentage agreeing being ages 60-69 years old (64.5% Agreed or Strongly Agreed), before decreasing slightly for those 70 and over. Those that are 20-29 years old are most likely to be always searching for free Wi-Fi (29.8% Agreed or Strongly Agreed), while those under 20 are most likely to disagree that the government should cover the cost of high-speed internet, annually, for people who can't afford it (35.7% Disagreed or Strongly Disagreed, compared to all other groups). However, those under 20 years old are also in the age group that most strongly agrees that the government should cover the cost as well at 64.3% (Strongly Agreed). In looking just at the strongly agree category, it is interesting to see how the strongly agree category decreases as age increases, as seen in Figure 8.

Figure 8. The government should cover the cost of internet by Age
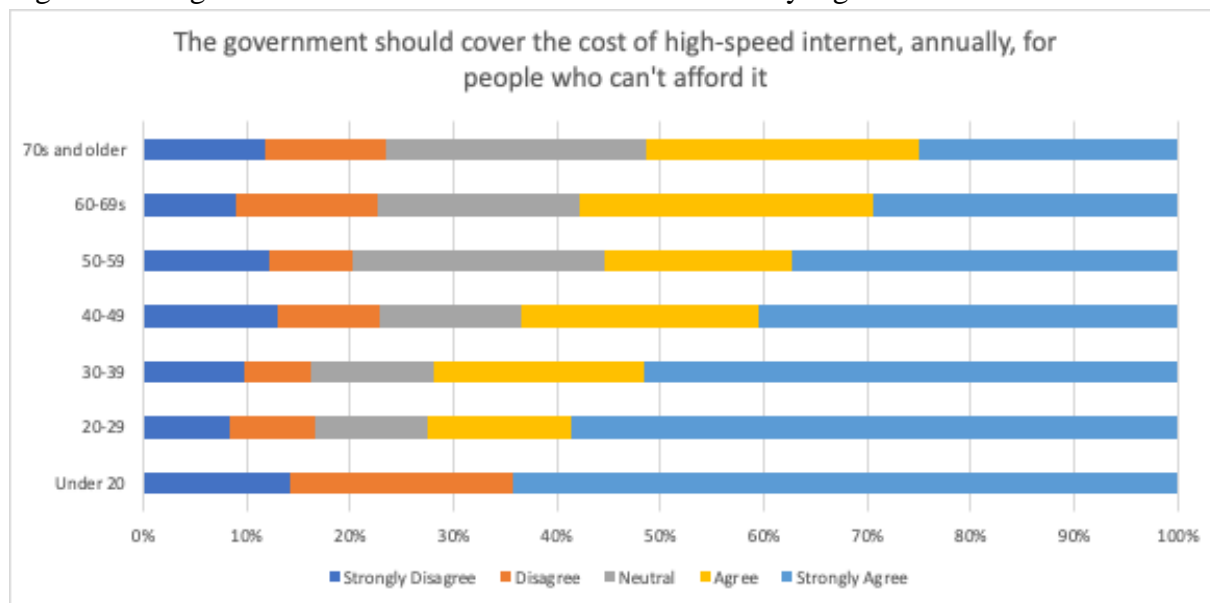
Key Take-aways about Affordability:

● There is a large gap between how much people want to pay and how much they actually pay - people want to pay $21-35 or less per month, but most pay over $51 per month.

● There is a lack of knowledge around low cost internet options - 8.1% of respondents indicated that they knew about Comcast Internet Essentials; 6.2% about AT & T Internet Basic; and 17.3% knew about multiple low cost options.
  ○ However, 62.5 % of respondents didn't know of any low-cost options.

● 55.7% of people believe the cost of the internet is too high.

● 19.1% of people feel they are always searching for free wifi.

● 61.1% of people agree that the government should pay for those who cannot afford broadband.

● 79.7% would sign up for a government program to reduce the cost of Internet service if available.

Beliefs and attitudes about technology[3]

We also wanted to better understand the beliefs and attitudes individuals have toward technology. In looking at Figure 9 and Table 22 below, we see that 89.7% of Nashvillians Agreed or Strongly Agreed that the internet is very important in their lives. Similarly, 86.5% Agreed or Strongly Agreed that they are comfortable using computers, and 74.2% (Agreed or Strongly Agreed) believe that they have enough access to devices and the internet to meet their needs.

Figure 9. Overall Beliefs and Attitudes about Technology
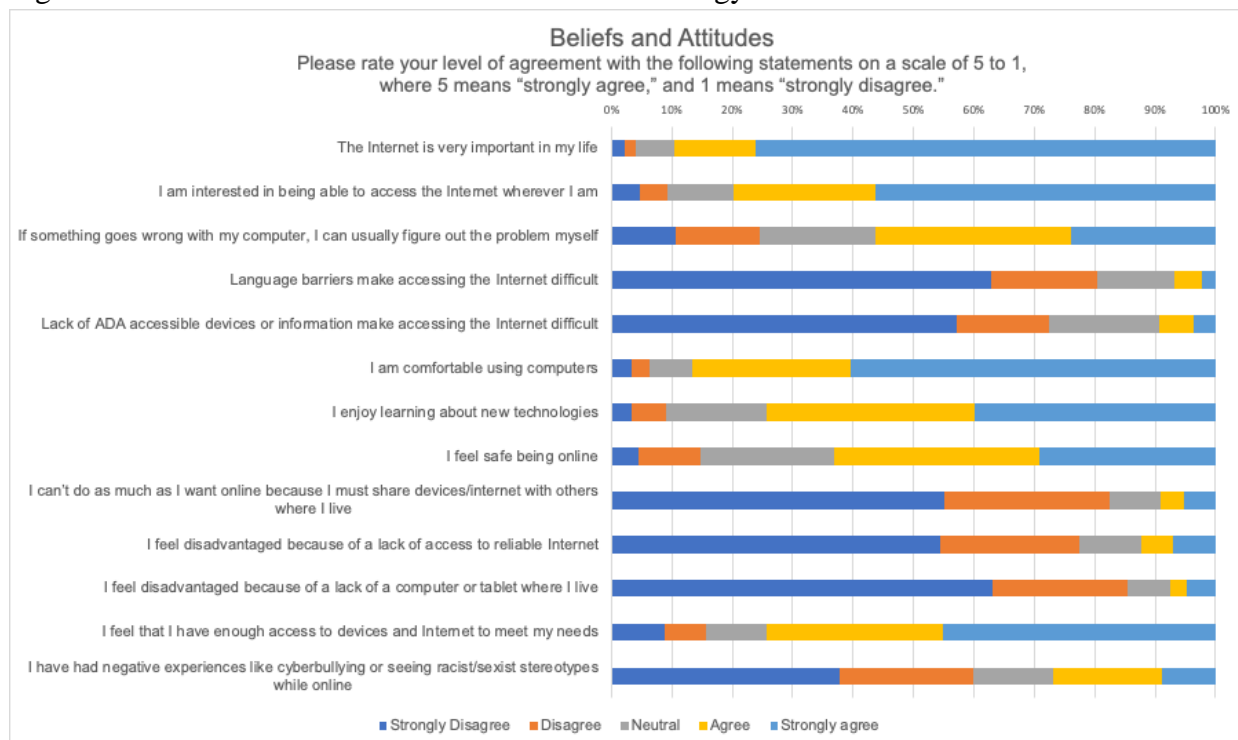
People are less confident in their ability to fix problems with computers (only 56.3% reporting they Agreed or Strongly Agreed), though people enjoyed learning about new technologies (74.2%) and felt safe online (63%). Conversely, 15.6% of Nashvillians did not feel they had sufficient access to the internet and devices (Disagreed or Strongly Disagreed), with 12.3% overall feeling disadvantaged because of their lack of access to the internet (Agreed or Strongly Agreed), and 7.5% feeling disadvantaged because of a lack of devices (Agreed or Strongly Agreed). Language barriers were reported as an issue by 7.0% of respondents (Agreed or Strongly Agreed), while lack of ADA accessible devices was an issue for 9.4% of individuals (Agreed or Strongly Agreed). Having to share devices or the internet was reported as an issue by

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[3] Because of the length of the survey, certain questions were omitted to increase the response rate in the field work data collection. In this section, questions 22.4 - 22.5, 22.8 – 22.11, 22.14-22.15 were omitted in the shortened survey.

9.0% of the overall sample (Agreed or Strongly Agree). Finally, 26.9% (Agreed or Strongly Agreed) of individuals report having negative experiences online, such as cyberbullying or seeing racist/sexist stereotypes online.

Table 22. Overall Beliefs and Attitudes about Technology

	Total N	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
The Internet is very important in my life	1860	2.2%	1.9%	6.2%	13.5%	76.2%
I am interested in being able to access the Internet wherever I am	1594	4.6%	4.7%	10.9%	23.5%	56.2%
If something goes wrong with my computer, I can usually figure out the problem myself	1610	10.7%	14.0%	19.0%	32.4%	23.9%
Language barriers make accessing the Internet difficult	1735	62.9%	17.5%	12.7%	4.6%	2.4%
Lack of ADA accessible devices or information make accessing the Internet difficult	1611	57.2%	15.2%	18.2%	5.8%	3.6%
I am comfortable using computers	1611	3.4%	2.9%	7.1%	26.2%	60.3%
I enjoy learning about new technologies	1605	3.3%	5.8%	16.7%	34.4%	39.8%
I feel safe being online	1609	4.4%	10.4%	22.0%	34.1%	29.1%
I can't do as much as I want online because I must share devices/internet with others where I live	1547	55.1%	27.3%	8.5%	3.7%	5.3%
I feel disadvantaged because of a lack of access to reliable Internet	1788	54.3%	23.2%	10.2%	5.3%	7.0%
I feel disadvantaged because of a lack of a computer or tablet where I live	1773	63.2%	22.3%	7.1%	2.8%	4.7%
I feel that I have enough access to devices and Internet to meet my needs	1585	8.8%	6.8%	10.2%	29.0%	45.2%
I have had negative experiences like cyberbullying or seeing racist/sexist stereotypes while online	1558	37.7%	22.2%	13.2%	18.0%	8.9%

We also examined beliefs and attitudes about technology by race/ethnicity, gender, age and zip code. A link to the complete set of tables and figures can be found in the Appendix E.

In terms of gender identification, females more likely to say that the internet is important in their life (94.3% Agreed or Strongly Agreed), that they are interested in being able to access the internet wherever they are (83.4% Agreed or Strongly Agreed), and that they are comfortable using computers (89.3% Agreed or Strongly Agreed). Although females were less likely to feel confident in their ability to fix issues with computers (51.9%Agreed or Strongly Agreed, compared to 63.2% of males and 67.8% of nonbinary and other gender categories). Males, on the other hand, reported enjoying learning about new technology in higher percentages than other groups (78.2% Agreed or Strongly Agreed). And although the gender nonbinary group is relatively small in comparison to the other gender groups, they are less likely to feel safe online (54.9% Agreed or Strongly Agreed, compared to 63.6% of females and 65.3% of males) and more likely to report negative experiences online (45.2% Agreed or Strongly Agreed, compared to 29.1% of Females and 24.4% of Males). Gender nonbinary and individuals identifying with other gender categories were also more likely to report that language (9.1% Agreed or Strongly Agreed) and lack of ADA devices (18.7% Agreed or Strongly Agreed) are barriers to accessing the internet, though a higher percentage also report that they have sufficient internet to meet their needs (83.9% Agreed or Strongly Agreed, compared to 74.3% of females and 77.1% of males).

Interesting differences in beliefs about technology by race and ethnicity can be seen in the data. In looking at how important the internet is to individuals, Black Nashvillians were less likely to agree that the internet was important to them than those from other groups, though the percentage of those who Agreed or Strongly Agreed were still relatively high (82.7% Agreed or Strongly Agreed, compared to 95.6% for Whites, 90.1% for Bi- or Multi-racial individuals, and 90.6% for American Native/Indigenous). Black and Hispanic/Latinx respondents were also less likely to report feeling comfortable with computers, compared with White, Asian and Bi- or Multi-racial individuals (78.7% and 76.0% Agreed or Strongly Agreed, respectively - compared to 93.6% for Whites, 93.5% for Asians, and 92.4% for Bi- or Multi-racial). Asian respondents were most likely to report enjoying learning about new technologies (87% Agreed or Strongly Agreed).

17.7% of Hispanic/Latinx respondents Agreed or Strongly Agreed that language was a barrier to internet use, while American Native/Indigenous (20.0% Agreed or Strongly Agreed) and Asian (19.2% Agreed or Strongly Agreed) Nashvillians were most likely to say that lack of ADA accessible devices were a barrier to internet use. American Native/Indigenous Nashvillians were also most likely to report feeling that they are not able to do as much online because of the need to share devices (27.2% Agreed or Strongly Agreed), and to feel disadvantaged because of a lack of reliable internet (32.3% Agreed or Strongly Agreed) and lack of devices (25.8% Agreed or Strongly Agreed). American Native/Indigenous and Black respondents were also more likely to

report not having enough access to devices and the internet to meet their needs (33.4% and 24.5% Disagreed or Strongly Disagreed, respectively).

There were differences in technology use by age as well. Although all age groups had relatively high agreement that the internet was important in their lives, those 70 years and older actually had the highest level of agreement with the statement (94.8% Agreed or Strongly Agreed) and that they had sufficient access to the internet and devices to meet their needs (83.3% Agreed or Strongly Agreed). However, they were least likely to report being able to fix issues if a problem arises on their computer (33.4% Agreed or Strongly Agreed). Confidence in being able to fix issues on a computer decreases with age.

30-39 year olds and 40-49 year olds were most likely to report feeling comfortable using computers (90.3 % and 90.2% Agreed or Strongly Agreed, respectively), interest in learning about new technologies (79.8% and 78.5% Agreed or Strongly Agreed, respectively), and feeling safe online (67.6% and 69.9% Agreed or Strongly Agreed, respectively), though they 30-39 year olds also reported the highest levels of negative experiences online (37.7% Agreed or Strongly Agreed).

Finally, we examined differences by zip codes. In looking at zip codes, we see that those in the 37207, 37208, or 37211 zip codes were less likely to report that the internet was important to them (85.0% Agreed or Strongly Agreed, compared to 92.2% for other zip codes) or that they were interested in being able to access the internet wherever they are compared to other zip codes, (74.5% Agreed or Strongly Agreed, compared to 81.8% for other zip codes) - though the percentage agreement was still relatively high. They were also less likely to agree that they had sufficient access to the internet and devices to meet their needs (68.1% Agreed or Strongly Agreed, compared to 77.3% for other zip codes). However, those in the 37207, 37208, or 37211 zip codes did report higher agreement with being able to fix issues arising with computers (61.6% Agreed or Strongly Agreed, compared to 56.6% for other zip codes).

Although the focus of this section was on beliefs and attitudes towards technology, the survey also asked a few questions about individuals' social and emotional wellbeing. Figure 10 below provides an overall view of responses to these social and emotional wellbeing questions.

Figure 10. Overall Social and Emotional Wellbeing

Social and Emotional Wellbeing
Please rate your level of agreement with the following statements on a scale of 5 to 1, where 5 means "strongly agree," and 1 means "strongly disagree."
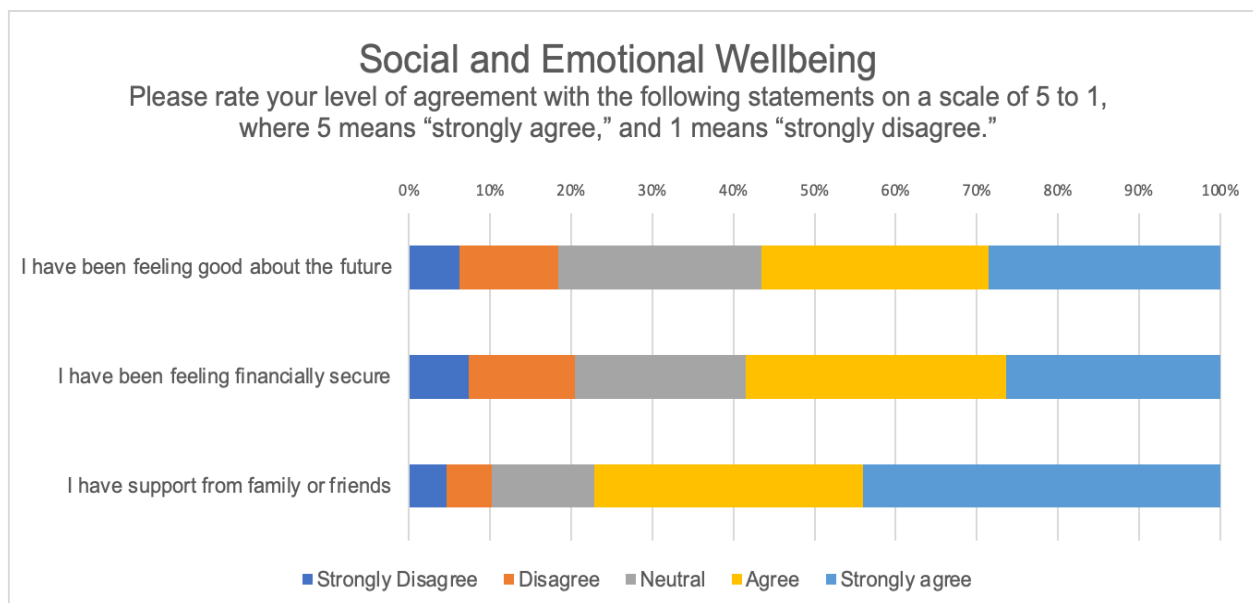
Although the majority of Nashvillians report feeling good about the future and financially secure, 18.4% (Disagreed or Strongly Disagreed) of the overall sample are not as sure about the future and 20.5% (Disagreed or Strongly Disagreed) do not feel financially secure. Similarly, although 77.1% of respondents felt that they had the support of family and friends (Agreed or Strongly Agreed), 10.2% did not (Disagree or Strongly Disagree).

In terms of gender identification, those that identified as gender nonbinary were less likely to feel good about the future (35.2% Agreed or Strongly Agreed), to feel financially secure (37.1% Agreed or Strongly Agreed), or to feel supported by family or friends (48.6% Agreed or Strongly Agreed). The difference is pronounced in terms of financial security, there is also a high level of disagreement with the statement (37.2% Disagreed or Strongly Disagreed). Females were more likely to report feeling good about the future (57.8% Agreed or Strongly Agreed) and having the support of family and friends (79.1% Agreed or Strongly Agreed), while Males were more likely to report feeling financially secure (60.2% Agreed or Strongly Agreed).

Looking at Race/Ethnicity, Asian and Bi- or Multi-Racial individuals are least likely to feel good about the future (37.5% and 38.9% Agreed or Strongly Agreed, respectively), with Asian respondents in particular Disagreeing or Strongly Disagreeing with those statements (43.8% Disagreed or Strongly Disagreed). Asian Nashvillians were also least likely to agree that they felt financially secure (43.8% Agreed or Strongly Agreed), while American Native/Indigenous respondents were least likely to agree that they had the support of family and friends (64.7% Agreed or Strongly Agreed).

There were differences in social and emotional wellbeing by age as well. Generally, feeling good about the future decreases with age, though those under 20 Disagree or Strongly Disagree at a higher percentage than those who are in the 20-29 age group.

Finally, we examined differences by zip codes. 37207, 37208, or 37211 zip codes were more likely to report higher levels of social and emotional wellbeing in all categories compared to those in other zip codes, though the difference is most pronounced in feelings about the future, where 61.2% Agreed or Strongly Agreed they felt good, compared to 52.9% in other zip codes.

Key Take-aways about Beliefs and Attitudes:

- 89.7% of Nashvillians Agree or Strongly Agree that the internet is very important in their lives.
- 74.2% believe that they have enough access to devices and the internet to meet their needs.
  - 15.6% of Nashvillians did not feel they had sufficient access to the internet and devices (Disagreed or Strongly Disagreed)
  - 12.3% overall feel disadvantaged because of their lack of access to the internet.
  - 7.5% overall feeling disadvantaged because of a lack of devices.
- People are less confident in their ability to fix problems with computers (only 56.3% reporting Agreed or Strongly Agreed)
- 17.7% of Hispanic/Latinx respondents report that language was a barrier to internet use
- Asian (19.2%) and Indigenous (20.0%) Nashvillians were most likely to say that lack of ADA accessible devices were a barrier to internet use.

Internet usage[4]

In looking at questions surrounding technology usage, it is clear that Nashvillians use the internet for looking up information over any other use, with 77.6% of respondents reporting doing so Daily. A majority of people reported Daily use of the internet for reading news (67.7%), entertainment (60.9%), and connecting with family and friends (56.5%). About half of all Nashvillians (49.1%) use the internet Daily for completing work on their current job.

Although Nashvillians were least likely to use the internet to buy bus passes or apply for government services (with 94.4% and 80.5% replying they Rarely or Never do so respectively), 38.8% of respondents did use the internet to check or request city information or resources once a week or more. Fewer Nashvillians used the internet to find or apply for a job (67.3% Rarely or Never), take online courses (59.9% Rarely or Never), learn job-related skills (57.3% Rarely or Never), or attend a religious service online (57.3% Rarely or Never). Although less frequent, significant numbers of Nashvillians also used the internet to pay bills online (84.5% doing so Monthly or more frequently), buy or sell something online (68.3% Monthly or more frequently) or attend online meetings or events (68.1% Monthly or more frequently). Figure 11 and Table 23 below provide an overall view of internet use for the sample.

Figure 11. Overall Internet Usage

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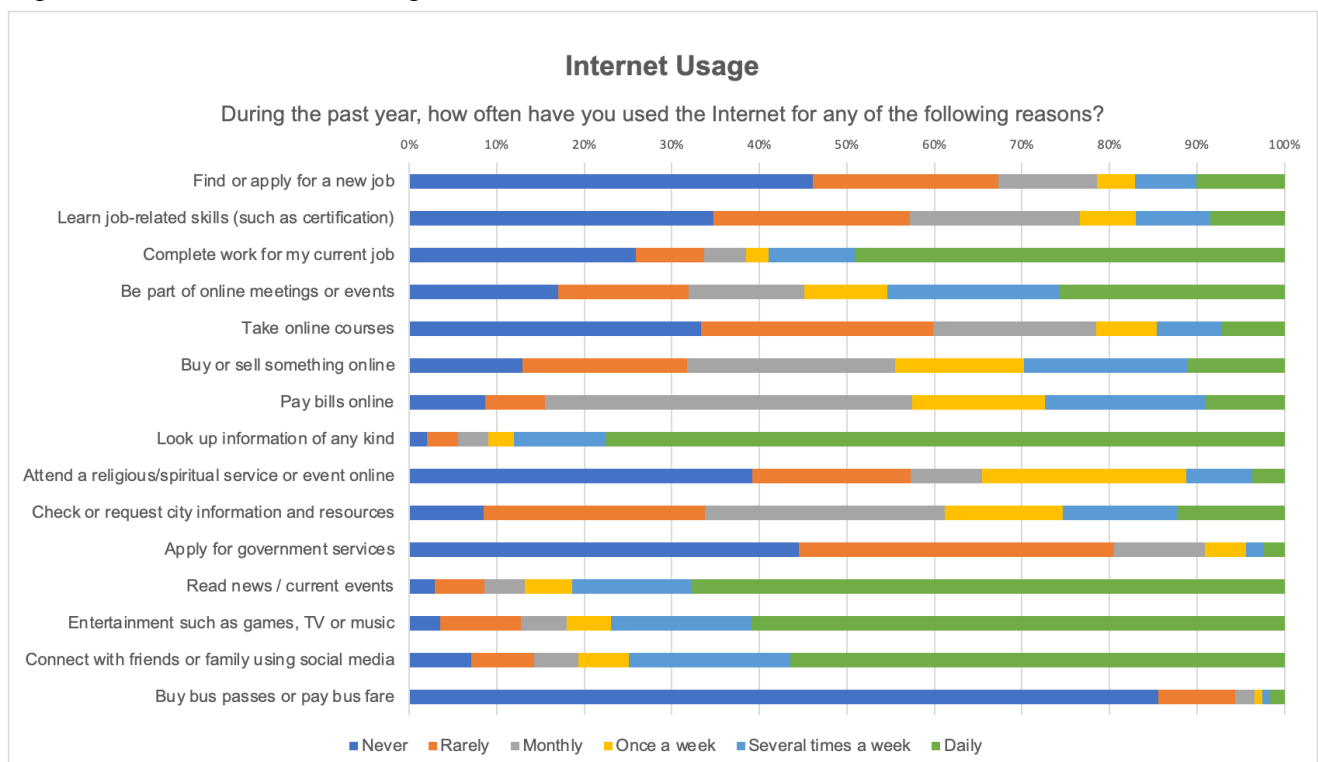
[4] Because of the length of the survey, certain questions were omitted to increase the response rate in the field work data collection. In this section, questions 23.3, 23.5 – 23.6, 23.9, and 23.12 were omitted in the shortened survey.

Table 23. Overall Internet Usage

	Total N	Never	Rarely	Monthly	Once a week	Several times a week	Daily
Find or apply for a new job	1855	46.1%	21.2%	11.2%	4.4%	7.0%	10.1%
Learn job-related skills (such as certification)	1798	34.8%	22.5%	19.4%	6.3%	8.6%	8.5%
Complete work for my current job	1527	25.9%	7.8%	4.8%	2.6%	9.8%	49.1%
Be part of online meetings or events	1856	17.0%	15.0%	13.2%	9.5%	19.7%	25.7%
Take online courses	1578	33.3%	26.6%	18.6%	7.0%	7.4%	7.2%
Buy or sell something online	1635	13.0%	18.8%	23.8%	14.7%	18.8%	11.0%
Pay bills online	1877	8.7%	6.8%	41.9%	15.2%	18.4%	9.0%
Look up information of any kind	1862	2.0%	3.5%	3.5%	3.0%	10.4%	77.6%
Attend a religious/spiritual service or event online	1559	39.2%	18.1%	8.1%	23.3%	7.6%	3.7%
Check or request city information and resources	1826	8.5%	25.3%	27.4%	13.5%	13.0%	12.3%
Apply for government services	1813	44.5%	36.0%	10.4%	4.7%	2.0%	2.3%
Read news / current events	1627	2.9%	5.7%	4.6%	5.5%	13.6%	67.7%
Entertainment such as games, TV or music	1864	3.5%	9.3%	5.2%	5.0%	16.0%	60.9%
Connect with friends or family using social media	1868	7.1%	7.2%	5.0%	5.8%	18.4%	56.5%
Buy bus passes or pay bus fare	1793	85.6%	8.8%	2.2%	0.9%	0.8%	1.7%

In looking at the various uses of technology, we also examined differences by group. A link to the complete set of tables and figures can be found in the Appendix E.

The general frequency patterns described above were mirrored in the results by gender. Although the gender nonbinary group is relatively small in comparison to the other gender groups, those who were gender nonbinary reported more frequently using technology for almost

every category, except for attending religious services online, checking or requesting city information, and connecting with family and friends (70.0%, 40.0%, and 11.4% reporting Never or Rarely, respectively). In those categories, Females had the highest percentages in terms of their frequency in using technology, with the most pronounced difference seen in the connect with family and friends, where 64.3% of females did so on a daily basis, compared to 49.9% of males, and 57.1% of those identifying with another gender category.

Hispanic/Latinx respondents least frequently used the internet to find and apply for jobs (75.5% reporting Rarely or Never), or to learn job related skills (67.8% reporting Rarely or Never). American Native/Indigenous (75.0%), Black (42.8%), and Hispanic/Latinx (40.3%) Nashvillians were most likely to report that they Rarely or Never used the internet for their current job, while Bi- or Multi-racial (70.2%) and White (68.7%) respondents were most likely to report using the internet Daily in their current jobs.

Bi- or Multi-racial and White respondents also more frequently attended online meetings or events (74.7% and 75.3% Monthly or more frequently, respectively), as well as buy or sell something online (73.0%, and 70.5% Monthly or more frequently, respectively). Asian respondents most frequently paid bills online (93.9% Monthly or more frequently). The smaller Other category most frequently attended religious or spiritual services (66.6% Monthly or more frequently), followed by Black respondents (50.0% Monthly or more frequently).

In looking at ways individuals often used the internet on a Daily basis, American Native/Indigenous respondents had the highest percentage of using the internet to look up information on a Daily basis (95.7%) and to connect with family and friends (78.6%), while Asian respondents had the highest percentage of reading the news online (87.9%). Bi- or Multi-racial respondents had the highest percentage of those using the internet for entertainment on a Daily basis at 75.8%, though American Native/Indigenous were a close second at 75.0% reporting Daily use.

There were differences in internet use by age as well. In terms of using the internet to find and apply for new jobs, to learn job related skills, and to take online courses, these categories tended to decrease in frequency as individuals got older.

However, for some categories, the frequency of using the internet increases from under 20 to 20-29 year older, reaching the highest frequency with 30-39 year olds before decreasing in frequency as individuals get older. This U-shaped pattern can be most clearly seen in the percentage that use the internet daily for completing work in their current job, as seen in Figure 12 below. It can also be seen in the frequency of attending online meetings, buying or selling something online, paying bills online, looking up information, checking city information, reading the news, and connecting with others on social media.

Figure 12. Complete work for my current job by Age
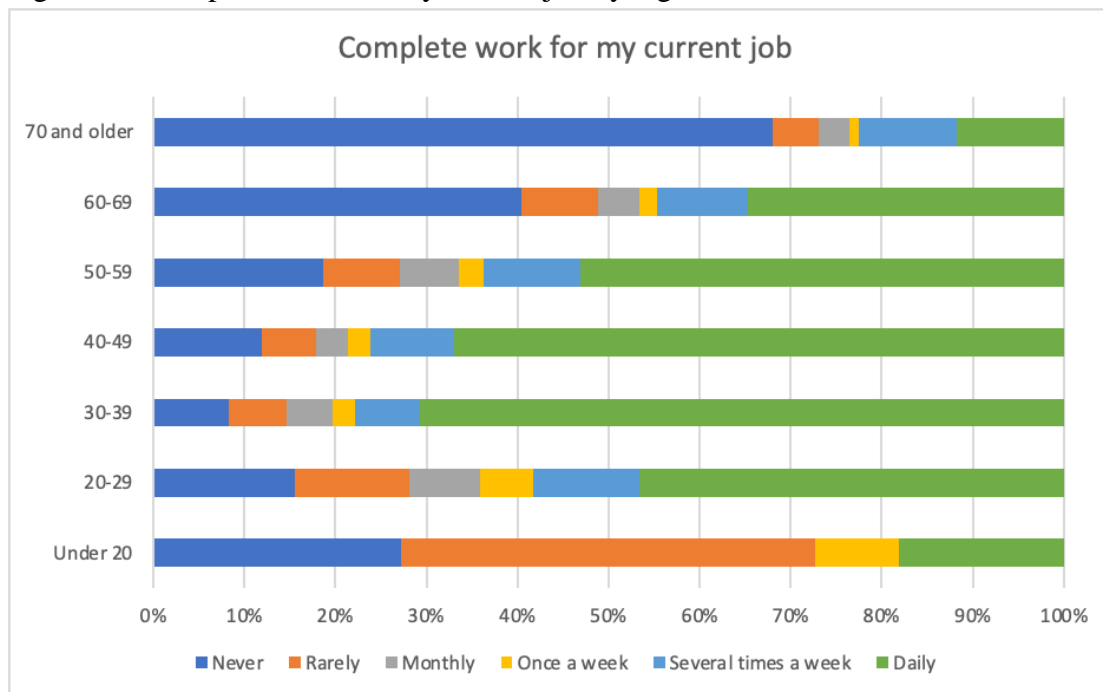
Interestingly, those under 20 and those 70 and over were most likely to attend a religious or spiritual service online, with 54.5% and 53.3% reporting doing so Monthly or more frequently, respectively.

Finally, we examined differences by zip codes. Those in the 37207, 37208, and 37211 zip codes had a slightly higher frequency of using the internet to apply for jobs (32.1% doing so Monthly or more frequently compared to 31.4% for other zip codes), though they were less likely to use technology to learn job related skills (39.3% doing so Monthly or more frequently compared to 44.0% for other zip codes) or to complete work for their current job (57.9% doing so Monthly or more frequently compared to 71.2% for other zip codes). Those from the 37207, 37208, and 37211 zip codes also reported less frequent use for being part of online meetings (42.1% Rarely or Never), taking online courses (65.6% Rarely or Never), buying or selling online (36.2% Rarely or Never), paying bills online (20.6% Rarely or Never), or looking up information (8.4% Rarely or Never). On the other hand, respondents from the 37207, 37208, and 37211 zip codes reported higher frequencies for using technology to attend religious services (47.3% Monthly or more frequently), apply for government services (23.8% Monthly or more frequently), for entertainment (88.4% Monthly or more frequently) and to connect with friends and family (88.4% Monthly or more frequently), and to buy bus passes (7.9% Monthly or more frequently).

Key Take-aways about Internet Use:

- Respondents were most likely to use the internet daily to look up information, read news, for entertainment, and to connect with friends and family.
- About half of all Nashvillians (49.1%) use the internet Daily for completing work on their current jobs - though there were age and race differences in job related tasks.
- Although Nashvillians were least likely to use the internet to buy bus passes or apply for government services (with 94.4% and 80.5% replying they Never or Rarely do so respectively), 38.8% of respondents did use the internet to check or request city information or resources once a week or more frequently.
- Fewer Nashvillians also used the internet to find or apply for a job (67.3% Rarely or Never), take online courses (59.9% Rarely or Never), learn job-related skills (57.3% Rarely or Never), or attend a religious service online (57.3% Rarely or Never).
- However, Black respondents and those 20 and under and 70 and older were most likely to attend a religious service online.
- Although less frequent, significant numbers of Nashvillians also used the internet to pay bills online (84.5% Monthly or more frequently), buy or sell something online (68.3% Monthly or more frequently) or attend online meetings or events (68.1% Monthly or more frequently).

Technology skills and capabilities[5]

The survey explored questions related to technology skills and capabilities, including:
- Familiarity with computers, the internet, and smartphones,
- Likert-scale items related to common computer and internet tasks, and
- Preferred types of technical support.

To better understand respondents' technology skills and capabilities, we asked how many years they used a computer, the internet, and smartphones in any way. Table 24 provides an average of the number of years for the overall sample, then by gender, race, age, and zip code. In the overall sample, respondents had an average of 19.16 years of computer use, 17.62 years of internet use, and 12.17 years of smartphone use.

Table 24. Familiarity with devices and internet

	Years of Computer Use	Years of Internet Use	Years of Smartphone Use
Overall Sample	19.16	17.62	12.17
Female	20.03	18.13	12.52
Male	19.60	18.36	12.33
Other	22.93	21.59	12.39
American Native/Indigenous	10.54	12.61	10.00
Asian	25.33	22.57	12.26
Black/African American	14.19	14.21	11.61
Hispanic/Latinx	18.27	16.99	10.91
White	26.72	22.59	13.30
Other	15.94	15.37	11.76
Multiracial	20.56	18.99	12.42

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[5] Because of the length of the survey, certain questions were omitted to increase the response rate in the field work data collection. In this section, questions 24.4-24.5, 24.9, and 24.11-24.12 were omitted in the shortened survey.

10-19 Years Old	7.04	9.25	9.60
20-29 Years Old	9.60	9.81	8.86
30-39 Years Old	18.42	17.28	13.02
40-49 Years Old	20.84	18.85	13.21
50-59 Years Old	20.26	18.63	12.13
60-69 Years Old	23.39	21.06	11.99
70+ Years Old	24.61	22.30	13.12
37207, 37208 & 37211	18.42	18.32	12.80
All Other Zip Codes	22.91	20.16	13.25

In looking at familiarity with technology by Gender, there is very little variation among groups, though individuals that are gender nonbinary have higher average use of computers and the internet compared to other groups. In looking at Race/Ethnicity, American Native/Indigenous respondents had the lowest average number of years using computers, the internet or smartphones, with Black respondents having the next lowest average in terms of computer and internet use, and Hispanic/Latinx individuals having the next lowest average years of using the smartphone. In general, familiarity with technology goes up by age, and there is a large increase in the average years of use between 20-29 year olds and 30-39 year olds. However, familiarity with smartphones decreases for those 50-59 years old, then for those 60-69 years old. By zip code, those in the 37207, 37208 & 37211 zip codes had lower average years of use in all three categories compared to those in other zip codes.

In addition to familiarity with different types of technology, we asked respondents to report how capable they felt doing a variety of tasks involving technology. This section included thirteen questions ranging from simple tasks like"*Turn on a computer to do basic tasks,*" and "*Arrange travel (book hotels, flights, etc.) online,*" to more tasks requiring more technology skills, like "*Create my own personal website or blog*" and "*Write computer code in any language.*" In general, most Nashville residents felt capable of turning on the computer to do basic tasks (89% Agreed or Strongly Agreed that they were capable of this task) and getting using apps, accessing the internet on a smartphone (86% Agreed or Strongly Agreed). Similarly, many Nashvillians felt capable of using computer software like Word and Excel (80% Agreed or Strongly Agreed)

and arranging travel (book hotels, flights, etc.) (79% Agreed or Strongly Agreed). Most residents also felt comfortable creating and managing social media profiles (72% Agreed or Strongly Agreed).

Nashville residents felt less confident with more complex technology skills, like writing code in any language (77% Disagreed or Strongly disagreed that they were capable of this task). They also felt less capable of creating a personal website (38% Disagreed or Strongly Disagreed) and making their own content like videos, photos, or music (35% Disagreed or Strongly disagreed).

Importantly, 17 percent of Nashville residents Disagreed or Strongly Disagreed that they felt capable of making an appointment for a COVID-19 test or vaccine. This simple, yet essential task is an important indicator of technology skills and capabilities, especially during the COVID-19 pandemic.

Figure 13. Technology Capabilities and Skills
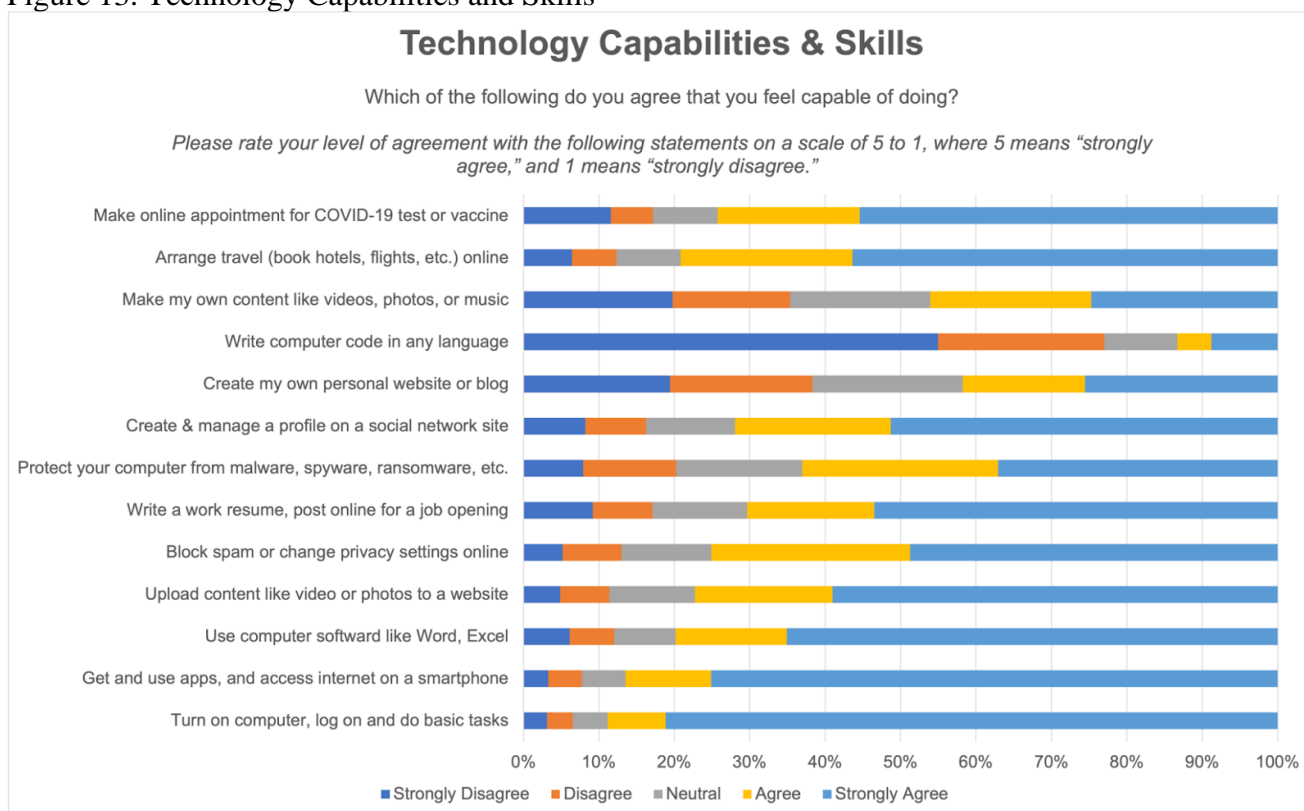
Table 25. Overall Technology Capabilities & Skills

	Total Valid N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Turn on computer	1916	3.1%	3.4%	4.6%	7.7%	81.2%
Get and use apps, and access internet on a smartphone	1916	3.3%	4.5%	5.7%	11.4%	75.1%
Use computer software like Word, Excel	1899	6.2%	5.9%	8.1%	14.7%	65.1%
Upload content like video or photos to a website	1649	4.9%	6.5%	11.3%	18.3%	59.0%
Block spam or change privacy settings online	1661	5.2%	7.8%	11.9%	26.3%	48.8%
Write a work resume, post online for a job opening	1811	9.2%	7.9%	12.5%	16.8%	53.5%
Protect your computer from malware, spyware, ransomware, etc.	1885	7.9%	12.4%	16.7%	25.9%	37.1%
Create & manage a profile on a social network site	1863	8.2%	8.1%	11.8%	20.6%	51.3%
Create my own personal website or blog	1594	19.4%	18.9%	19.9%	16.2%	25.5%
Write computer code in any language	1849	54.9%	22.1%	9.7%	4.5%	8.8%
Make my own content like videos, photos, or music	1609	19.8%	15.6%	18.6%	21.3%	24.7%
Arrange travel (book hotels, flights, etc.) online	1635	6.4%	5.9%	8.5%	22.8%	56.4%
Make online appointment for COVID-19 test or vaccine	1869	11.6%	5.6%	8.6%	18.8%	55.4%

There were few differences when it came to gender, however, Nashville residents who identified as female seemed to be more confident with more social related items like creating and managing social media profiles (76.9% of Females Agreed or Strongly Agreed that they were capable of this task, whereas only 70.3% of Males and 70.6% of individuals with nonbinary or other gender categories thought the same) but were less confident writing computer code in any language (only 10.2% of Females Agreed or Strongly Agreed as compared with 16.3% of mMales and 22.9% of individuals with nonbinary or other gender categories).

Similarly, when examining differences between racial categories, there were some differences in perceived technology capabilities. For example, 97.0% of White respondents Agreed or Strongly agreed that they were able to do basic tasks on a computer. This majority was also reflective of Asian respondents (97.0% Agreed or Strongly Agreed) and Multi- or Bi-racial respondents (93.0% agreed or strongly agreed). Similarly, 89.8% of Hispanic/Latinx respondents reported that they Agreed or Strongly Agreed that they had this skill. Notably, perceived capability of this task was not as prevalent for American Natives/Indigenous (77.4% Agreed or Strongly Agreed, with 12.9% reporting "Neutral," or potentially unsure responses), Black/African Americans (78.6% Agreed or Strongly Agreed), and respondents in the Other category (85.7% Agreed or Strongly Agreed).

Despite increased confidence in turning on a computer for basic tasks, some respondents reported disagreement when it came to whether they felt they could make an online appointment for a COVID-19 test or vaccine. Specifically, 29.3% or more than 1 in 4 Black/African American respondents Disagreed or Strongly Disagreed that they had the technology know-how to schedule a COVID-19 test or vaccine appointment themselves. By comparison, only 3.2% of Asian and 8.6% of White respondents Disagreed or Strongly Disagreed with this statement.

Although the above COVID-19 example illustrates current gaps in digital skills, it is important to situate this conversation within the context of everyday skills connected to one's livelihood. For example, when asked whether they were able to "write a work resume and post online for a job opening," 78.1% of White and 72.7% of Asian respondents Agreed or Strongly Agreed that they were able to do this. This prevalence drops to 66.7% (Agreed or Strongly Agreed) for American Native/Indigenous. Important to note, only 60.6% of Black/African American respondents Agreed or Strongly Agreed, with 24.7% or roughly 1 in every 5 Black respondents Disagreeing or Strongly disagreeing with being able to write and post a resume online for a job opening.

When it comes to turning on the computer to conduct basic tasks, older Nashville residents report higher agreement levels, with 88.2% of respondents ages 60-69 Agreeing or Strongly Agreeing with this capability and an even greater majority for those over the age of 70 (93.6% Agreed or Strongly Agreed). Interestingly, Nashville residents over the age of 70 represent the group most in agreement with being able to turn on a computer, which may reflect interest in developing digital skills and using technology.

Although older Nashvillians can turn on the computer, some struggled when making online appointments for COVID-19 tests or a vaccine. Specifically, 77.6% percent of individuals ages 60-69 reported that they Agreed or Strongly Agreed with this capability, while 74.3% of those over the age of 70 reported the same. Only 69.6% of those ages 50-59 expressed Agreement or Strong Agreement with their ability to book an appointment online. Interestingly, younger respondents reported lower levels of agreement with being able to book an online appointment as

well. For respondents ages 20-29, 68.0% Agreed or Strongly Agreed with this capability. This across-the-board lack of agreement suggests that booking an appointment may have been more challenging than one might expect, technology skills aside. Additionally, many younger Nashville residents may have struggled with making an appointment due to availability and time frames, rather than inability to schedule the appointment using technology capabilities.

As expected, older adults reported lower levels of agreement with technology skills like writing computer code in any language and blocking spam or changing passwords, with only 5.7% and 63.8% of those ages 70 and over expressing Agreement or Strong Agreement with these skills, respectively.

Many jobs today require a basic foundation of technology skills, including using computer software and programs like Word and Excel. Applying for jobs increasingly requires the production of a resume, as well as the ability to search for and submit applications online. That a said, older respondents reported lower levels of agreement with the ability to use these software (76.6% of those ages 70 and over Agreed or Strongly Agreed, with 75.8% of those 60-69 in agreement), however, the responses of these groups were similar to agreement levels for younger Nashvillians (e.g., 20-29 and 20 and under, 78% and 71.4% respectively).

When it came to writing and submitting a work resume for a job online, only 44.4% of those ages 70 and over reported their Agreement or Strong Agreement with being able to do so, with 60-69 year olds and 20-29 year olds reporting 59.4% and 75.8% Agreement or Strong Agreement, respectively.

Finally, taking a deeper look at differences between zip codes, we found that respondents in high-need zip codes (37207, 37208, and 37211) were less likely to be able to turn on a computer in order to conduct basic tasks. In this regard, only 84.4% of those residing in high-need zip codes Agreed or Strongly Agreed that they had this capability, compared to 92.6% in other zip codes. Similarly, only 84.3% of individuals in high-need zip codes (as compared with 89.8% of other zip codes) Agreed or Strongly Agreed with being able to get and use apps and access the internet via smartphone.

When it came to making an appointment for a COVID-19 test or vaccine, 1 in every 5 residents (20.1%) in the high-need zip codes group shared that they Disagreed or Strongly Disagreed with being able to do this, as compared with 14.7% (Disagreed or Strongly Disagreed) of those in all other zip codes.

In sum, these self-reported tech capabilities represent both a picture of perceived skills as well as a gap in digital readiness based on lack of tech skills. The recommendation section explores potential solutions to this gap, specifically related to building digital imagination and the aspirations that individuals have regarding their technology capabilities.

Preferences for technical support

In thinking about skills and competencies, it is also important to understand preferences for technical support. To better understand ways to support digital inclusion we asked, *What kind of technology support would you be most likely to use?* Overall, most respondents preferred online support (48%) to other types of technology support, as seen in Table 26 below.

Table 26. Overall Types of Preferred Technology Support

	Total Valid N	Total %
Online Support	1438	48.0%
Phone Support	885	29.5%
In-person Support	672	22.4%

We also wanted to better understand preferred types of technical support by different demographic categories, as seen in Table 27. All Race/Ethnicity groups preferred Online Support to other types of support, with Asians most strongly preferring this option at 67.6%. American Native/Indigenous respondents were more likely than other groups to prefer Phone Support at 39.3%, while Hispanic/Latinx individuals were most likely to prefer In-person support at 31.5%

Similarly, in looking at gender identification, all three groups preferred Online Support, with gender nonbinary and individuals identifying with other gender categories most strongly preferring this option at 67.6%. Females were more likely than other groups to prefer Phone Support at 28.9%, while Males had the highest percentage preferring In-person Support at 25.2%.

Interestingly, although most age groups preferred Online Support following the overall pattern, those under 20 reported preferring Phone Support (48.1%). They were also most likely to prefer In-person support (29.6%). However, it should be noted that this is a smaller group relative to other age categories.

In terms of Zip Code, both groups preferred Online Support, though those in the 37207, 37208 and 37211 areas were more likely to prefer In-person support than those from other areas (26.7%).

Table 27. Types of Preferred Technology Support by Demographic Categories

	Online Support	Phone Support	In-person Support
American Native/Indigenous	34.4%	39.3%	26.2%
Asian	67.6%	18.9%	13.5%
Black/African American	42.7%	30.3%	26.9%
Hispanic/Latinx	41.1%	27.4%	31.5%
White	57.7%	28.4%	13.9%
Other	61.9%	14.3%	23.8%
Bi- or Multi-racial	48.6%	27.9%	23.4%
Female	50.7%	28.9%	20.3%
Male	47.5%	27.1%	25.2%
Other	67.6%	16.2%	8.1%
Under 20	22.2%	48.1%	29.6%
20-29	40.1%	33.7%	26.2%
30-39	59.4%	20.5%	20.1%
40-49	56.4%	25.8%	17.9%
50-59	43.4%	32.9%	23.7%
60-69	42.1%	35.0%	22.9%
70 and older	39.5%	33.1%	27.4%
37207, 37208 & 37211	49.4%	23.9%	26.7%
Other zip codes	58.1%	26.8%	15.1%

Key Takeaways about Technology Capabilities and Skills:

- Nashville residents reported agreement with a range of technical capabilities, with less agreement for skills that required active content creation, coding, or generation of unique technological assets (e.g., photos, videos, websites, blogs, code).
- Differences between agreement levels for these capabilities and skills were influenced by gender, race/ethnicity, age group, and geographic categories; Black/African American and American Indian/Alaska Native tended to report less agreement with technology skills.
- Age group analysis revealed that while older adults may report less agreement with technology capabilities, that for many items, agreement was comparable to other, younger age groups.
- Results indicate that residents in high-need zip codes (37207, 37208, and 37211) may have a skills gap in comparison to other zip codes. This is likely due to access, affordability, and opportunity issues rather than ability levels.
- Being able to log on to the computer to conduct basic tasks was a universally reported capability, however, important workforce development skills (i.e., writing a work resume to post online and using computer software like Excel and Word) were not as widespread, suggesting key areas of growth for Nashvillians hoping to work in an increasingly digital world.
- Specific interventions based on gender, race/ethnicity, age, and geographic region are warranted in order to bridge gaps in technology skills and capabilities across these groups.
- Most respondents preferred online technology support, though significant percentages of certain demographic groups preferred phone and in-person support.

Technology aspirations[6]

Different from technology capabilities and skills, technology aspirations represent self-reported indicators of what Nashvillians would like to be able to do using technology. The following 9 items discussed here illustrate just a few skill and resource development areas and the degree to which respondents agree that they are interested in pursuing them.

It is also important to note the higher response rate (e.g., 2000+ respondents for most items) as compared with some other survey sections.

Figure 14. Technological Aspirations

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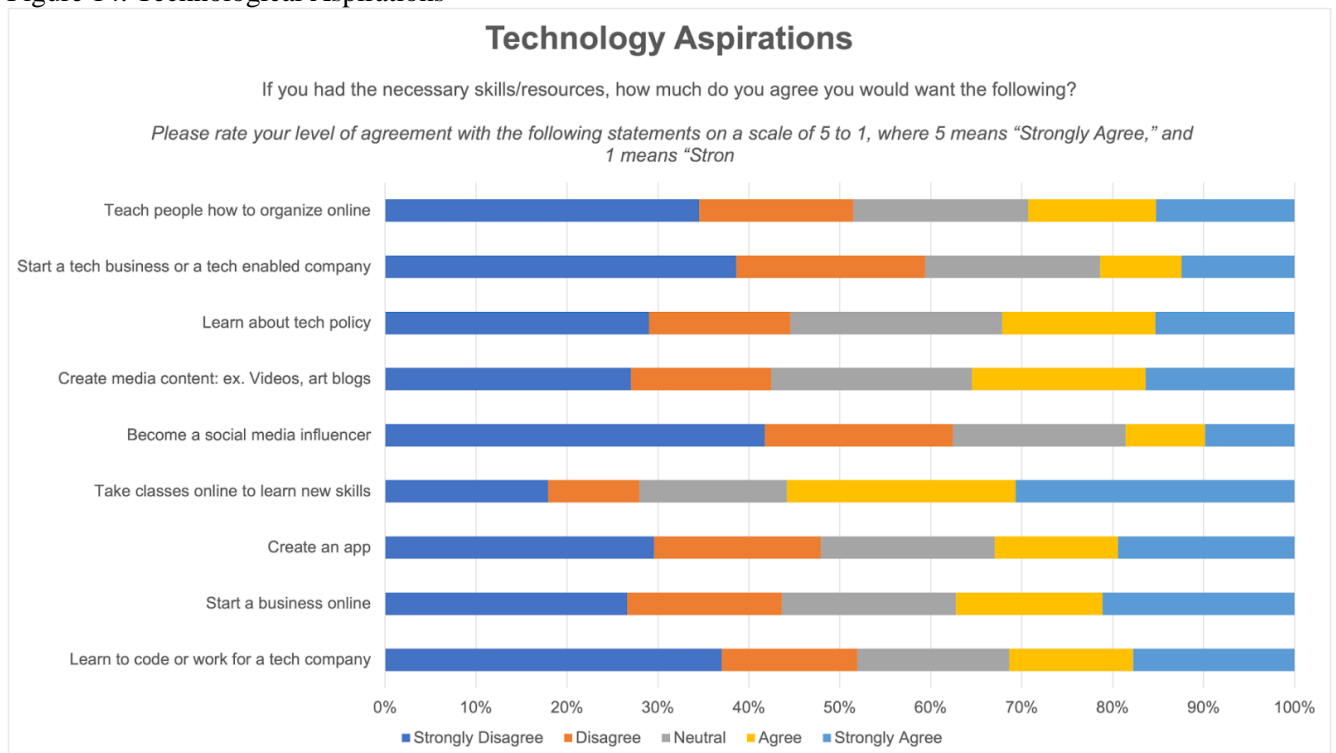
[6] Because of the length of the survey, certain questions were omitted to increase the response rate in the field work data collection. In this section, questions 25.5-25.6 were omitted in the shortened survey.

Table 28. Overall Technology Aspirations

	Total Valid N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Learn to code or work for a tech company	2928	37.0%	14.9%	16.7%	13.6%	17.8%
Start a business online	2942	26.6%	17.0%	19.1%	16.1%	21.1%
Create an app	2925	29.6%	18.3%	19.1%	13.5%	19.4%
Take classes online to learn new skills	2945	17.9%	10.1%	16.2%	25.1%	30.7%
Become a social media influencer	1976	41.8%	20.7%	19.0%	8.7%	9.9%
Create media content: ex. Videos, art blogs	1971	27.0%	15.4%	22.1%	19.1%	16.4%
Learn about tech policy	2925	29.0%	15.5%	23.3%	16.8%	15.3%
Start a tech business or a tech enabled company	2912	39.6%	20.8%	19.2%	9.0%	12.4%
Teach how to organize online	2904	34.5%	16.9%	19.2%	14.0%	15.3%

Over half of Nashville residents Agreed or Strongly Agreed that they aspired to take classes online in order to learn new skills (55.8%), with starting a business being the next popular aspiration wherein only 37.3% expressed Agreement or Strong Agreement. Interestingly, taking classes online was reported as one of the least frequent current uses of the internet, suggesting a gap in awareness and connection between residents and the type of online courses they would like to take. It is also possible that many residents wish to take classes online to learn new skills but do not know how to do so. Notably, only 18.6% of respondents Agreed or Strongly Agreed with aspiring to become a social media influencer.

Overall, results suggest a low level of reported aspirations. For most categories this resulted in less than 40% respondents reporting Agreement or Strong Agreement with wanting to try the technology aspiration listed. Lack of aspiration is not only indicative of interest, but may also be reflective of awareness and understanding of what is possible. In this respect, many Nashvillians may be interested in learning new online skills but are not able to see a connection between a skill and their life. Additionally, lack of foundational knowledge about technology may contribute to not being aware of or understanding some of the aspirations listed here.

There were some interesting differences in aspiration by gender, as well. Over 1 in every 4 male-identifying respondents (26.3% Agreed and Strongly Agreed) aspired to start a tech business,

whereas this aspiration was only true for 17.4% and 16.2% of female-identifying and the other gender categories, respectively. Interestingly, Agreement and Strong Agreement with the aspiration to teach people how to organize online was collectively higher for other gender categories (40.5%) than for those who identified as Male (29.5%) and Female (29.2%).

When it comes to race, notable differences arose when asked about aspirations to take classes in order to learn new skills. Only 49.6% of Black/African American respondents Agreed or Strongly Agreed with wanting to do this (as compared with 64.3% of White respondents, Agreed or Strongly Agreed), with 34.1% Disagreeing or Strongly Disagreeing (only 18.7% of White respondents expressed Disagreement or Strong Disagreement). This disagreement was topped only by those in the American Indian/Alaska Native category (43.1%, Disagreed and Strongly Disagreed).

Taking a look at another indicator of technological aspiration--learning to code or work for a tech company--revealed that Hispanic/Latinx Nashvillians were the least likely to Agree or Strongly Agree with wanting to do this. Only 25.7% of Hispanic/Latinx respondents expressed Agreement or Strong Agreement, as compared with 30.6% and 30.8% of Black/African American and White respondents, respectively. This insight has serious implications in Nashville, wherein a majority of new jobs are within the tech industry. Aspirations regarding learning to code may be constrained by current knowledge about the skills needed in order to do this.

Breaking down technological aspirations by age provided additional insight. Agreement with wanting to learn to code or work for a tech company decreased by age, however, it is important to note that almost 1 in every 5 residents over the age of 70 Agreed or Strongly Agreed that they wanted to learn to do this (19.1%). Notably the percentage of 20-29 (32.1%) and those Under 20 (38.5%) who expressed Agreement or Strong Agreement with learning to code and work for a tech company was comparable to the interest expressed in other groups (e.g., 35.4% of 40-49 year olds expressed Agreed or Strongly Agreed).

When it comes to differences in aspiration by zip code, 33.4% of residents in high-need Zip codes Disagreed or Strongly Disagreed with wanting to take classes online to learn new skills, whereas only 19.9% of those in other Zip codes reported the same. When it came to learning to code and working for a tech company, however, Agreement or Strong Agreement with this aspiration was nearly identical between groups (e.g., 29.1% of high-need zip code residents versus 29.9% of other zip codes). Taken together, these results suggest that access issues experienced by those in high-need Zip codes might deter aspirations to learn new skills via online classes, even though interests to learn these skills (e.g., coding to work for a tech company) is present.

Key Takeaways about Technology Aspirations:

- Technology aspiration levels are not as promising; the majority of Nashville residents expressed disagreement with most of the items, which may suggest a lack of understanding or awareness of how these skills could be useful to individuals.
- Lack of aspiration is not only indicative of interest, but may also be reflective of awareness and understanding of what is possible, or the ability one has to imagine their digital future or potential (i.e., digital imagination). In this respect, many Nashvillians may be interested in learning new online skills but are not able to see a connection between a skill and their life. Additionally, lack of foundational knowledge about technology may contribute to not being aware of or understanding some of the aspirations listed here.

Digital literacy and skills may influence aspirations to the extent that Nashville residents do not know what they do not know or could know and as such, do not (yet) aspire to know it.

- Over half of Nashville residents Agreed or Strongly agreed that they aspired to take classes online in order to learn new skills (55.8%), which indicates an overall interest in skill development.
- Technological aspiration levels differ by gender, race/ethnicity, age, and geographic location; understanding the differences in aspirations between groups can inform more targeted digital inclusion programs and skills training.

Qualitative Insight

Interviews and focus groups provided qualitative insight to support and expand the quantitative findings of the survey. Specifically, qualitative insight addressed key themes of access to broadband internet and devices, affordability of access, surveillance and privacy concerns, and perspectives around digital literacy and imaginations of our digital future. This expiration of digital imagination includes nonprofit leader perspectives in response to the question "What if everyone were digitally literate?" A final section explores a variety of vignettes profiling groups who may or may not have adequate digital access or skills. Individual quotes should not be viewed as representative of all Nashville residents' perspectives, but rather, as additional insight for illustrating the context of digital inclusion efforts in Nashville. Participant names have been excluded for confidentiality purposes; organizational affiliations for interviewees have been excluded for confidentiality purposes; and service organization of focus group participants has been provided for context.

Themes from Interviews

Organizational Challenges and Changes:

Increased Access due to Pandemic/Hybrid Model: "Our LGBT programming, actually we enrolled more people when going virtually and we have people from Memphis joining us now too. You know, we always had families who were willing to drive. I couldn't believe how far they drive to get their kid to get socially supported if they were trapped in a rural community. I mean, from Pigeon Forge, Tennessee, they would drive in for a support group. But now they don't have to" (Participant 103). This participant also noted that "high quality access to virtual spaces....So, once they're there they have to have a quality experience so that they want to keep coming back." is essential to their organization's work.

Digital Literacy holding back organization: "But as a it's holding [the organization] back as a business. We're not growing because we have employees who can effectively use the technology that we need to be more efficient. And productive. We have technology here that is under-utilized. That if you utilize the effectively would, we would have a better margin and more successful operation which would just, you know, that all that money just funds serving more women" (Participant 111).

Support for Nonprofit/Infrastructure: "Or, you know what is it like for nonprofits to share some type of consultant that they can help them to know how technology can, can be useful for them. And because nonprofits do share a lot of resources and kind of try to consolidate, and I think that nonprofits need more training around how to use technology. But then, but not just training, but also the higher ups and the decision makers need to know what is the latest technology that can be used, and how do I solve this problem using technology. And so I think they need to do more sharing in that way. And so finding consultants, consulting firms that are solving problems using technology, especially around the ability to work together to create networks." (Participant 116).

Shift to Virtual: "it was literally zero. We weren't using zoom. We weren't using technology in the program to really at all because it was all in person. And then we had to quickly pivot by April 1 to being 100% and we didn't have the infrastructure. So we were a little slow to catch up" (Participant 111).

Digital Literacy as a Barrier to Service Delivery: "Our volunteer's digital literacy skills were so low, we were spending all of our time serving our volunteers and trying to get their digital literacy skills up and running that we were not having enough time to serve our learners" (Participant 109).

Access Needs and Issues

Family Access Issues: "And so, or if a family has multiple children at home, and both a parent or both parents are working at home, they're all using the same internet source. And, you know, not that there's frustration there, but you are over your bandwidth" (Participant 110).

Importance of Personalized Support: "On the one side of these demographics, the older side, with digital literacy you're in or you're out. Without it you can't do anything. On this slide, digital literacy is part of their day to day life. So it's kind of the same dichotomy. --- There's, but, you know, again, for this population, well, um, they are working in entry level labor positions, which is not as far as I will say, however, don't assume that everybody in this group is entry level. So uh, a different impact but similar experiences." (Participant 123).

Accessibility online: "Well, anything that's not accessible they're missing on. So there, whether it's entertainment, or it's education, or its emergency access information. All of those things our community's going to miss out on. You know, we're establishing right now, we're working to offer a driver's ed class online just for the written part of the exam. Or a GED class or any of those things now that you think there's so much you can do online. You can take, you know, the Harvard X courses or the great courses or the all those things that are available to people online

at no cost now, but they're not accessible to our community. So I think that they're excluded from 90% of probably what's really produced out there right now" (Participant 118)

Starting with the Basics: "But you know, with that [digital] literacy piece, I do believe that we all should be speaking the same language, but it should be basic enough that we all understand it and provide that support. Okay, how much of a master you are doesn't mean that they have your master, if you can't, you know, train the next one" (Participant 112).

Motivation/Encouragement Barriers to Digital Skills: "I think it's really easy for people to get discouraged...Occasionally, we can have people who are like that the hurdles are so great. How do I get transportation? How do I take care of my child? How do I solve all of these problems? So the people that need, you know, that have the biggest need are also the people that have the more, the biggest problems, right?" (Participant 117)

Limitations of Mobile-only access: "Now there's only so much you can do on a phone. And we have women who will come back, who completed the program and they'll be coming back to use computers or scanners or you know here because they don't have anywhere out in the community that they can can do that, particularly when their job searching" (Participant 111).

Importance of Digital Inclusion for Communities

Community Trust and Digital Literacy: "We just need more credible relationships in the community because I might call somebody I know it'd be like, yo, my phone freezing. I don't know what to do with it. But I might not call somebody I don't know because I don't want to be vulnerable in front of that person. So I think that's what it means to be digitally literate, just being comfortable with your devices enough to be resilient when they're, when they're messing up because the digital isn't always reliable, but also having some type of backup in a community that you can call on when you're having issues with it." (Participant 120).

Community-building toward Digital Inclusion: "Clearly, as those who are not on may have internet access and hardware issues, but the need to build community. The need to know that you're not the only one of your tech company or you're not the only one thinking about digital inclusion issues. It creates a space for us to talk about and support each other. And also to share information and possible funding opportunities that are national. Not local because they don't invest in this locally." (Participant 122).

Lack of Promotion of Digital Inclusion Resources: "So I know that Metro Nashville Public Schools have learning hubs, you know, they, teach parents on how to do certain things. But we also have to look at the most basic thing that people tend to forget is the promotion of those hubs, or anything related to promoting our students access in this virtual world. So if I look at

promotions, like okay, I mean, I can look on Facebook pages, and I'm frustrated not to do such stuff, but do you know that you have access to different hubs and use of timeframes, so I think promotion is the most important piece when it comes to access to that digital divide and all that" (Participant 112).

Other Salient Quotes

Leveraging Individual Connections: "I used to work for T Mobile, I still have great relationships with my colleagues there. And I was able to reach out to one of my former managers, and she's actually for the transition team with T Mobile and sprint, and also working with Metro Nashville Public Schools with the whole hotspot connection, things of that nature. And I've shared information to her. So we were able to we're going to produce a document that shows parents how to, you know, make sure that device only connects to one device" (Participant 112).

Unique access issues/surveillance - Incarceration: "Well, I think that if there were centers or places specifically designated, right, and that they were strategically placed in areas that would not cause conflict in an individual. That if they went to that place because they have a sex offense, that they're going to be near a school and their buzzer is gonna go off on their ankle and some parole officer is gonna pull up and say you're in the wrong location, you know and lock you back up. So if, if, if a city or an area was very serious about serving this particular population of individuals, with digital literacy, then I think it has to be taken into consideration that in the city of Nashville they have a cloud that you can go on the computer and look at that shows you everywhere in a city that a sex offender cannot be" (Participant 104)

Surveillance and Policing: "Currently, they're trying to replace like standard policing with digital, essentially digital policing and surveillance...That they're replacing traditional police with as a cost saving measure. So I know like--there's, there's several different legislations happening right now where they're trying to put license plate readers on telephone poles and right aways and like on mobile units. Um, I don't know if that part of this conversation could be housed around digital inclusion?" (Participant 120)

"I also want to talk about like how big data is being used to do predictive policing, which is inherently wrong and bias because most of the data that they're getting is coming from public spaces where is most likely being used by black and brown folks. And those are the two major things. And I think that adds a lot of nuance to talking about the digital divide. Because the city of the state can somehow figure out a way to to provide us with license plate readers in North Nashville. But they can't seem to figure out a way to provide every high school, middle school, and elementary school student with reliable devices and the internet. So a piece of this seems to be I think that's just an evolution of the narrative between them spending more on police, prison,

and cages than they do on education. I think that's just I think we're starting to see that play out in the digital space as well." (Participant 120)

Interviewee Perspectives: What if...everyone were digitally literate?
The following quotes demonstrate just a few of the many learning and stories shared pertaining to what organization leaders might be able to do or innovate if their clients were "digitally literate," as well as their perceptions of digital literacy more broadly.

- "I would love to have all school personnel have such fluidity and easy access to like a partnership app. So that they can just immediately like pull out a device, go to a website or an app and say, you know, I need a partner to do a guest lecture about Photosynthesis on Friday and make it real for students and that it would be so quick and easy to do that and that the community would be so tied into that. They can immediately go and be like "well I can talk about photosynthesis. Sign me up." (Participant 101)
- "With digital literacy so I'm just wondering, beyond, sort of, you know, pop up tech centers how do we as a community help bring others along who are much younger and newer in the utilization of digital technology." (Participant 101)
- "Our volunteer's digital literacy skills were so low, we were spending all of our time serving our volunteers and trying to get their digital literacy skills up and running that we were not having enough time to serve our learners." (Participant 109)
- "Yeah, so for us to be able to take full advantage of our services it is to have so have, you know, internet, have a laptop, or phone or a computer, or a similar handheld device, and know how to operate and work Zoom. It's like the lowest common denominator we have." (Participant 110)
- "So even things like that that we're not thinking about, questions that could be answered if students are able to connect to someone who speaks their language or if parents are provided with training and again it's not for lack of effort and I know you know the English learner offices has been doing what they can to provide as much support, but I think if I were to think of one area where, especially in the K-12 system where an infusion of resources would be beneficial it would be for our English learner population." (Participant 100)
- "Well, I just don't think there are many jobs right now that don't require some level of digital literacy You know, I don't know why I was thinking this example. But, you know, if you go to Maplewood high schools automotive program, you know, when I was in high school, automotive, there's a bunch of guys under the hood of a car. Sparks flying. It's all it's all computers now." (Participant 102)

Focus Group Vignettes: Implications for Digital Inclusion Efforts

In addition to the above themes, focus groups with targeted populations provided additional insight into key groups that were not as represented in survey findings. Specifically, each of the

following focus groups was conducted with community members who had varying levels of access to broadband and devices, as well as varying digital literacy and skill levels. The information gleaned from focus group conversations is important for detailing potential barriers and challenges for digital inclusion efforts with specific groups and geographic areas.

Vignette #1: Northwest Y's Lack of Digital Comfort and Skills

The focus group with Northwest Y included community members who were all connected outside of the Y and occurred via the Zoom chat feature throughout the entirety of the session. Key takeaways from this focus group included viewing support for digital inclusion within school systems to be a central priority. Participants felt that technology and the internet would be an asset for everyone, if sufficient support and access were provided.

One participant shared, "I think this (COVID-19) has brought more exposure and understanding to people having a need for resources in general." (Northwest Y Focus Group participant)

Some participants, however, felt that they had been left out of the digital conversation and that they did not have the access or ability to use technology the way they wanted to. This perspective was supported by the fact that participants chose to only participate via the chat feature of Zoom; some participants were not comfortable with Zoom and others had trouble logging on in the first place.

Vignette #2: FiftyForward's Forward-Thinking About Digital Inclusion

A 50-years and up social club in the Bordeaux neighborhood in Nashville, FiftyForward represents a group of African American community members who came together to have a conversation about how technology prior to and during COVID allowed them to stay connected to friends and family. Many participants in this focus group discussed the positive aspects of technology use. One participant shared, "(With technology) I think about anything that I can think of that I want to know something about I can get on the internet and at least learn something about." (FiftyForward Focus Group participant). This forward-thinking, supportive perspective was extended when participants discussed their hopes for their organization:

"I think as of today we have ... FiftyForward has, which we've never done before, we have over 540 virtual programs that people can log on to and watch. I mean bird watching, cooking classes, music classes, a ton of things, Yoga, you name it we put it out there for people to use. Oh, yes. We definitely want to keep doing that because a lot of members now, if they can't come they can log on to our membership portal and just go and watch all these different videos." (FiftyForward Focus Group Participant).

It was clear that technology had assisted these individuals in connecting with others and socializing in meaningful ways that resulted in participants being protective of the useful nature

of technology overall. The use of an online portal also facilitated additional services that were not be able to be offered without the use of technology. Participants' hopes for improving technology, however, centered around access and comfort for seniors who are not currently connected. One participant shared their hopes by explaining, "That it'll get easier for the seniors. That it'll get a little bit more understanding the way that they can fix it for a lot of the seniors to where they'll be comfortable on it and using it and understanding it more." (FiftyForward Focus Group Participant).

In addition to positive perspectives, FiftyForward's group of older adults did highlight security and privacy risk/issue concerns (i.e., identity theft, security issues) that made them cautious about using the internet. They also mentioned that these concerns may deter other seniors from pursuing technology. Finally, participants of this focus group expressed the need for collaborating with different age groups (e.g., using high school students to help train them on technology as a part of a for-credit course) in order to learn more about technology and how it could be useful for them. This strategy seemed to have a lot of buy-in from focus group participants.

Vignette #3: AgeWell, A Different Take on Digital Inclusion for Seniors

Similar to FiftyForward, AgeWell is an organization focused on supporting older adults. This group of participants, however, felt less connected to the usefulness of internet/technology. One participant explained, "And it's good to be connected because there are a lot of people who are not. And don't want to learn. That's the thing, they're just stuck there. And it's unfortunate." (Agewell Focus Group Participant), while another shared, "My biggest thought is not for me personally, but for the connection between the non technical users and the rest of the world. There needs to be some thought given to, you still need to make phone calls, or you need to find other ways to communicate necessary information besides just through technology. I think for me to keep learning and have that access out there, and to have, like you were talking about, some classes that you can go to with somebody just to get tips or whatever." (Agewell Focus Group Participant).

Despite utilizing technology to connect with family members and friends in other states, AgeWell participants expressed that they were not as tech savvy. Specifically, participants highlighted the need for additional skills training to build upon initial introductions to the internet; this was viewed as a gap in opportunities. One participant shared their story:

"I want to add in some stuff here, because PCs came into our work world as I was about to take early retirement at age 55 in the year 2000, okay? And we were trained, I work with the state Department of Education, and so I had a knowledge of the word processing package and basic going to the internet, and using it to research topics, and that kind of thing. But now, 20 years later, I've not had any refresher courses." (Agewell Focus Group Participant).

Concerns about privacy and security were a main focus for this group. Additionally, those who were more talkative and open felt more encouraged by the use of technology; more reserved participants seemed more cautious or worried about technology and privacy.

Overall, comparing this focus group to the FiftyForward focus group illustrates discrepancies between individuals of similar age groups based on context and personal experiences with technology. One participant rounds out this takeaway by explaining the role of context for digital inclusion efforts:

"It's also getting coverage for everybody. I think about rural Tennessee. I think about refugee families, who are here to learn English and there are some great programs, but they've got to have the goodies to work with. I don't know enough to be intelligent about it, but I just think there are big disparities. And until that's evened out and reliable, we're going to have some problems along the way." (Agewell Focus Group Participant)

Vignette #4: Joelton and the Case for Access

In a smaller focus group, two passionate Joelton residents shared perspectives related almost exclusively to lack of access to home internet services in their community. Because this group focused primarily on lack of access, they did not mention privacy or security issues, or digital literacy/skills-related challenges. In this sense, lack of access precluded encounters with other challenges. Inadequate internet access in Joelton was exacerbated by the pandemic. One resident shared that, "Especially when students were remote. I didn't think the internet could get any slower, but I do think it did. Especially during those peak times, and with more people working from home" (Joleton Focus Group Participant).

As such, a main takeaway from this conversation was that a lack of adequate broadband means that you cannot participate fully or be an active participant in society in the ways that you might normally. This included everything from working remotely to attending virtual gym classes; one participant shared, "The one thing I realized is, my company has a gym and when the pandemic started, they obviously had to close the gym but within a few weeks, they had the gym instructors lead virtual classes and online stream and live stream. I can't do it. I can't participate in the gym classes" (Joleton Focus Group Participant).

When hypothesizing about why their community was not able to access adequate internet services, one participant provided, "I wonder if the reason we don't get the internet out here as much is because they figure they're not going to make as much money as it's going to cost them to do it. I'm sorry, I just want to turn it off. Dismiss. Because if they go somewhere where it's highly populated, a lot of people, they have less work to do to get more money. They only have to run so much wiring and they'll hit all these people. For us, they have to run more wire, I'm just saying, to only get so much money. Do you understand what I'm saying?" (Joleton Focus Group Participant).

Finally, one participant shared some aspirations for older adults by explaining what a nonprofit might do to support digital inclusion:

"The one thing I do think that a non-profit would probably be really helpful with are older people or people that don't have the same technology experience for instance I do. I wonder if there would be a non-profit that would help those individuals. They then could maybe apply online for a better job to get a better livelihood so to speak. I wonder if certain people in the community might need some assistance to learn initially more technology or the digital life than other people" (Joleton Focus Group Participant).

Vignette #5: Project Return, Far Removed from the Digital World

This focus group included formerly incarcerated individuals, who had re-entered society within the last 3 weeks to 3 months. In many ways, participants of the Project Return focus group were removed from the digital world and had trouble explaining what a normal day-to-day looked like when it comes to technology and digital access. In this vein, participants' connections to and experiences with technology was more dated, recent reconnection to smartphones and devices (e.g., flip phones with minutes). For example, one participant shared a detailed account of their struggle with accessing a cell phone once released and explained why cost is a key barrier: "So maybe it's more community education and maybe some mentorships. And even more access to technology free. We all have these phones. But in another month or two, I won't be able to pay for airtime. So if a family member doesn't step up, I won't even hear about any of this...So just more resources, more readily access and just guidance" (Project Return Focus Group Participant). This participant went on to explain why guidance and general support are so important for those who are formerly incarcerated. They said, "One of the things that were overwhelming for the first few days, we're so used to being told, sit there, go to medical, go do that. Then you're the halfway house for a few days and you're like, "No, one's yelling at me to do something which I did," and it takes... It was over 10 years for me. It took me a couple of days to finally dawn on me, "I can do it myself. Nobody has to tell me to go do this" (Project Return Focus Group Participant).

Focus group participants held both positive and negative perspectives about technology use. Reflecting on the utility and positive consequences of technology, a participant shared:

"Technology to me is a phenomenon. It is just amazing, the thought of technology and all the access we have with it. And being incarcerated in prison and having to start all over in life, at first I was kind of weary about letting things go or the fact that I lost things or it was taken away from me. But I discovered that nothing was taken away. Everything can be replaced very easily. I'm accumulating things at rapid speed. And I'm so grateful for technology, because I had lost all contact with all family members. But with Facebook and its abilities, I've been reaching out to all

type of family members. They're so excited to hear from me. I'm excited to hear from them. So I'm forever grateful for technology" (Project Return Focus Group Participant).

On the other hand, one participant who identified as more tech savvy shared a more negative perspective by saying, "I'm good with technology. But I just wish it wasn't on such a grand scale to be honest. And I feel like it's taking jobs away. I feel like it's coming down. I feel like instant gratification is not good for us either. So, I feel even though it definitely has its benefits, especially in the medical field, on a day-to-day social field is slowly destroying us" (Project Return Focus Group). For a third participant, technology use presented both positive and negative consequences. They explained, "But at the same time, I feel like it is contradictory. I feel like we're losing our connection with some people because it's (technology's) isolating us so much. When it's convenient it's good. But it definitely is going to have its downfall if it continues" (Project Return Focus Group Participant).

As a whole, focus group participants noted that their main use of technology was to find jobs and locate affordable housing options, however, some participants lacked the skills and comfortability to do these tasks. One participant explained, "The opportunities are here. Maybe people don't have the access to be able to find them. So maybe a little bit more publicity as to how we go about getting to them" (Project Return Focus Group Participant). Another participant detailed the fact that they might be able to find a job, but that many jobs are online or remote in nature and not possible to do within communal or shared housing units. They explained, "So obviously that's not something that when you're in a communal living environment, it is not practical or appropriate...I simply cannot accept. They call me back and start talking to me. It sounds like it's a good option. And then they're like, "Well, how was your internet connection at home?" just write then and there, "No, it's a remote job. I can't accept it" (Project Return Focus Group Participant).

In addition to these challenges, there seemed to be an overwhelming sense that the entire world had moved on and left focus group participants behind in every sense of their lives. One participant captured this sentiment by saying, "It's been warp speed going from having almost no real computer, no internet access to all of a sudden, boom!" (Project Return Focus Group Participant). As such, their conversations reflected that their identity and sense of self is negatively influenced by this. When asked about digital inclusion efforts and what a nonprofit might do in order to better support people in their situation, one participant shared, "Like I said earlier maybe, a little bit more education when we return, like with cell phones, which are very popular now...before I was incarcerated, I was a computer expert. But things have changed. So, I definitely would enjoy even as a class, for only a week or a few days learning more about something more intensive to come out in the last few years. Using a newer version of Windows and Office" (Project Return Focus Group Participant).

In addition to a lack of access to digital skills training, a few participants highlighted their fears

about the addictive nature of technology. In particular, one participant explained, "I feel like technology is very addictive. Especially a lot of the apps that they have...You have more depression issues, more anxiety issues because you're working and comparing and it is constantly in your face" (Project Return Focus Group Participant). Multiple participants also shared issues and concerns about technology and security/privacy. In particular, one participant shared a case of identity theft in which someone had filed taxes in their name for two years. This caused many issues for the individual and left them hesitant to trust technology. Another participant explained, "And my email address, my God. You put your email address on a resume up on a site, and everyone gets you" (Project Return Focus Group Participant). In this sense, participants seemed to feel like their identity could be stolen or that they could be taken advantage of online. Psychologically, the influence of technology and digital access/skills looks very different for this group, prompting a need for specific digital inclusion interventions tailored for their needs.

Focus Group Takeaways

These vignettes highlight the importance of context and experience when it comes to digital inclusion efforts. While each group discussion highlighted a different type of "access" issue, not all participants had the same perspectives or needs when it came to technology. For most participants, access issues superseded digital skills training and capabilities. In this sense, access to affordable, reliable internet and devices was a key barrier for participation in society. Further, a lack of up-to-date digital skills training disabled many participants from being able to fully utilize what they did have access to. In sum, focus group participants gave voice to the constraints that access places on one's ability to fully engage in today's world, as well as the limitations a lack of access holds for technological capabilities and aspirations for future use.

Study Considerations and Future Directions

This mixed-methods study was designed to gain a deeper understanding of digital inclusion challenges and opportunities in Nashville. However, it is important to consider both the strengths and limitations of the study, as well as potential future directions for additional research.

There were a number of challenges to the data collection that should be noted. First, given the COVID-19 pandemic, qualitative data collection had to be done virtually. Virtual data collection did not pose a problem for interviews with nonprofit partners, but proved to be a challenge in arranging focus groups - particularly when reaching out to communities with less access to digital technology. Additional focus group data collection is anticipated throughout the summer of 2021, as opportunities for in-person gatherings increase.

Additionally, there were challenges to the field canvassing. Field canvassing requires individuals to complete the survey in a single setting with the designated canvasser. Given the length of the survey, a number of participants did not complete the entire survey instrument. In an effort to mitigate this challenge, a shortened version of the survey was created - though this also meant that certain questions had fewer responses than others. And although the field canvassing yielded a sample with desired representation from low income, housing insecure, and technologically underserved communities, it was less successful in capturing the immigrant and refugee voices of English language learners - a key demographic category of interest.

Given the sample, certain identity categories were collapsed because of low sample size. At the same time, certain questions had a greater number of responses than others. In an effort to balance between sample size and question response rates, certain demographic categories with small sample sizes remained. Efforts were made throughout the document to indicate when this was the case to aid in data interpretation.

Finally, this preliminary draft is meant to provide a basic overview of study outcomes from the quantitative and qualitative data collection. Additional analysis is needed to fully understand the implications of both the qualitative and quantitative data.

However, the study also provides the first comprehensive look at digital inclusion in Nashville. It addresses questions of access to the internet and devices, affordability, beliefs and attitudes about technology, technology use, technology skills and competencies, and technology aspirations - information not previously available in our city. Additionally, it includes both qualitative and quantitative data collection - providing both a breadth and depth of data around digital inclusion, where the voices of technologically underserved communities were intentionally centered and highlighted.

Given these study considerations, there are a number of future directions that we would like to explore for future research and action, including:

- **Continued data collection and assessment of needs, with particular focus on ELL and other high need populations.**
  - Incorporate additional, targeted questions focused on digital literacy, readiness, adoption, and imagination.
  - Incorporate sustainable future data collection plans to understand digital inclusion and equity changes over time.
- **Conduct a network analysis of current community infrastructure, utilizing asset mapping of collaborators provided in nonprofit interviews.**
  - Interview data included information about organizational collaborations, which could be analyzed further to better understand the ways in which existing community infrastructure could support digital inclusion efforts.
- **Expand training and resource options for specific groups across Nashville.**
  - Programs like Tech Goes Home can adopt a neighborhood approach with more customized options based on community needs.
  - NPL's digital inclusion programs for older adults could also be expanded.
  - Best practices from digital inclusion efforts in cities such Chicago and Durham could be explored and adapted for Nashville contexts.
  - Possible evaluation measures for any potential digital inclusion programs and resources should be incorporated into future research plans.
- **GIS mapping of digital inequality in high need zip codes (37207, 37208 and 37211).**

These additional research activities would help us better address digital inclusion needs in Nashville, both now and in the future.

Recommendations

Given the data from the study, some general recommendations based on insights from the analysis, as well as specific action items to consider are provided. In terms of general recommendations, a few points to consider include:

1. **A one-size-fits approach will not work for digital inclusion.**
   a. There are a number of technologically underserved communities in Nashville, including racial minorities, ELL populations, low-income individuals, geographic areas without access (such as Joelton), and individuals in particular age groups. However, each group has a different set of needs related to digital inclusion, and it is important to tailor resources and services to address those needs.
2. **Organizational missions align with and require digital inclusion.**
   a. Interviews with nonprofit partners highlight the ways in which service providers are invested in increasing digital equity for the communities they serve.
   b. We must integrate and amplify digital inclusion efforts within services and support already provided.
   c. Many organizations are viewed as reliable sources of information (as compared with social media), yet there is an opportunity to increase their reach to the communities they serve regarding digital inclusion efforts.
3. **We must leverage current community infrastructure in support of digital inclusion.**
   a. Many organizations demonstrated their capacity to incorporate digital skills and training through service shifts during the COVID-19 pandemic.
   b. Current community leaders, volunteers, sites, and programming can be utilized to support digital inclusion (e.g. train-the-trainer, culturally competent training).
4. **Facilitating communication and collaboration among digital inclusion efforts across the city (and state) is needed.**
   a. A cross-city working group to provide a space for idea-sharing, collaboration, and accountability would catalyze digital inclusion efforts.
   b. Communication of digital inclusion services and resources to underserved communities is needed - for example, of the Emergency Broadband Benefit.
5. **Learning more about Nashvillians' digital imagination and aspirations will inform and guide future digital inclusion efforts.**
   a. Digital readiness and capacity must include one's ability to imagine and shape their identities around the usage of digital tools and skills.
   b. Expanding digital imagination is essential for Nashville's workforce development and education.

In addition to these general considerations, there are also a number of specific action steps that can be taken to further digital inclusion across Nashville. Our report is timely given the current federal infrastructure debate which includes billions of dollars for broadband's access,

affordability, and adoption. Currently, the Federal Communication Commissions (FCC) has launched an Emergency Broadband Benefit program that gives a $50 dollar subsidy monthly and a $100 dollar device to people who qualify for existing government programs or have had a Covid related issue. Nearly 60,000 Tennesseans have signed up for this government subsidy. There is talk on the Hill about making this a permanent broadband subsidy for Americans. We believe Nashville can be a model, given our inclusive Smart City Plan and our study focus on accessibility and adoption, for how a city creates a fully inclusive connected municipality through community centered research and actionable strategies driven by data.

Recommendations:

- Metro Government should develop a working relationship with Commissioner Bob Rolfe who leads the Tennessee Department of Economic and Community Development in which all broadband activities fall under. Specifically, Metro Government should have a conversation about how the state should consider "underserved" zip codes in Davidson County who may have access to broadband established by the FCC's definition (e.g. 25 mb/3 mb), but either lack the financial means to get the internet or lack the digital literacy to adopt it.
- Metro Government should work with partners at the state level to apply for state funds (e.g. Tennessee Broadband Accessibility Grant) and Federal Grants to support connectivity. Specifically, NTIA Announces $288 Million in Funding Available to States to Build Broadband Infrastructure.
- Metro Government should work with metro libraries and MNPS to apply for the E-Rate Emergency Connectivity Fund (e.g. 7.1 billion) which is a federal program targeted for libraries and schools.
- Metro Government should develop MOUs with Nashville HBCUs in or near any zip codes outlined in the report to provide access and digital training: Connecting Minority Communities Pilot Program. A $285 million grant program to Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), and Minority-Serving Institutions (MSIs).
- Metro Government should develop a Digital Inclusion Officer like the City of Detroit who can guide both private companies and the philanthropic community to establish an "actionable" fund. Detroit's digital inclusion officer developed a partnership with Detroit's public school system, Quicken Loans Community Fund, The Skillman Foundation, DTE Energy and others to launch Connected Futures—a $23 million program to provide Detroit kids with devices, free broadband and tech support.

A listing of the funding opportunities mentioned above can be found in Appendix A.

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Broadband Infrastructure Program

Now Available: Session 3 Webinar Presentation, Transcripts, and Recordings

Thank you to all who were able to join us for our recent Broadband Infrastructure Program Session 3a and 3b webinars. Were you unable to attend? Or maybe you want to go back and review the information presented? You can check out the links below for copies of the presentations, transcripts, and webinar recordings:

Session 3a – Held June 9, 2021 at 2:30pm ET

Session 3b – Held June 10, 2021 at 2:30pm ET

Register Today for Next Month's Webinars

Join NTIA staff for our upcoming Broadband Infrastructure Program Session 4 webinars on July 14 and 15. These webinars will build up on the previous month's presentations, helping prospective applicants further understand the grant programs and assisting applicants to prepare high quality grant applications. Learn more and register today:

Session 4a – July 14, 2021 at 2:30pm ET

Session 4b – July 15, 2021 at 2:30pm ET

New Round of FAQs

NTIA has recently published its second round of FAQs regarding the Broadband Infrastructure Program. This document offers a deeper dive into some of the most commonly asked questions we have been receiving from prospective applicants regarding eligibility, other broadband funding programs and eligible service areas, application requirements/process, and post awards requirements. Subsequent FAQ rounds will be published periodically throughout the application window. See the new round of FAQs below:

Frequently Asked Questions (FAQs) 06-10-2021

ICYMI: Broadband Infrastructure Program Resources

In case you missed it, below are some helpful resources related to the Broadband Infrastructure Program:

Broadband Infrastructure Program Webpage

Official Broadband Infrastructure Program NOFO

FAQs – Round One

[Grants.gov Link to Opportunity](#)

Tribal Broadband Connectivity Program

Now Available: Session 3 Webinar Presentation, Transcripts, and Recordings

Thank you to all who were able to join us for our recent Tribal Broadband Connectivity Program Session 3a and 3b webinars. Were you unable to attend? Or maybe you want to go back and review the information presented? You can check out the links below for copies of the presentations, transcripts, and webinar recordings:

[Session 3a – June 16, 2021 at 2:30pm ET](#)

[Session 3b – June 17, 2021 at 2:30 pm ET](#)

Register Today for Next Month's Webinars

Join NTIA staff for our upcoming Tribal Broadband Connectivity Program Session 4 webinars on July 21 and 22! These webinars will build up on the previous month's presentations, helping prospective applicants further understand the grant programs and assisting applicants to prepare high quality grant applications. Learn more and register today:

[Session 4a – July 21, 2021 at 2:30pm ET](#)

[Session 4b – July 22, 2021 at 2:30pm ET](#)

First Round of FAQs Published

To accompany the Tribal Broadband Connectivity Program NOFO, NTIA staff also released the first round of FAQs. The FAQ document will assist potential applicants with some of their preliminary questions related to the new grant program. Topics include eligibility, evaluation of applications, and grant award and reporting requirements. Subsequent FAQ rounds will be published periodically throughout the application window. See the FAQ document below:

[FAQs – Round One](#)

ICYMI: Tribal Broadband Connectivity Program Resources

In case you missed it, below are some helpful resources related to the Tribal Broadband Connectivity Program:

[Tribal Broadband Connectivity Program Webpage](#)

[Dear Tribal Letter (June 2021)](#)

[Official Tribal Broadband Connectivity Program NOFO](#)

[Grants.gov Link to Opportunity](#)

Connecting Minority Communities Pilot Program

Final Rule Released

The Department of Commerce's National Telecommunications and Information Administration (NTIA) today released the [Final Rule for the Connecting Minority Communities Pilot Program](#), which will direct $268 million for expanding broadband to eligible historically Black Colleges or Universities (HBCUs), Tribal Colleges or Universities (TCUs), and minority-serving institutions (MSIs). The Connecting Minority Communities Pilot Program was established by the Consolidated Appropriations Act, 2021. Grants will be distributed to help HBCUs, TCUs and MSIs purchase broadband service or equipment, hire IT personnel, operate a minority business enterprise, and facilitate educational instruction. The Final Rule describes the programmatic scope and general guidelines for the program. As directed by the Act, the Final Rule also establishes a method to determine applicant eligibility and identify which eligible recipients have the greatest unmet financial needs. Requirements for grant applications and other information about the program will be found in the Notice of Funding Opportunity that will be subsequently published on [grants.gov](#) later this summer.

Available Soon: Session 3 Webinar Presentation, Transcripts, and Recordings

Thank you to all who were able to join us for our recent Connecting Minority Communities Pilot Program Session 3a and 3b webinars. Were you unable to attend? Or maybe you want to go back and review the information presented? The presentations, transcripts, and webinar recordings will be available on these webpages by Friday, July 2:

[Session 3a – June 23, 2021 at 2:30pm ET](#)

[Session 3b – June 24, 2021 at 2:30pm ET](#)

Register Today for Next Month's Webinars

Join NTIA staff for our upcoming Connecting Minority Communities Pilot Program Session 3 webinars on June 23 and 24, as well as our Session 4 webinars on July 21 and 22! These webinars will help prospective applicants further understand the grant programs and assist applicants to prepare high quality grant applications. Learn more and register today:

[Session 4a – July 21, 2021 at 2:30pm ET](#)

[Session 4b – July 22, 2021 at 2:30pm ET](#)

Digital Equity Survey

Thank you for taking time to complete this important survey. This survey is being conducted by the Equity Alliance, the Digital Inclusion and Access Taskforce, and Vanderbilt's Peabody College about technology access and use. When you are finished, please return your completed survey in the postage-paid envelope provided. If you would prefer you can also take the survey online at: NashvilleDigitalEquitySurvey.org

1. **Do you have stable housing?** ____(1) Yes ____(2) No

2. **Including yourself, how many adults (age 18 or older) live in the place you currently live?**

_____ people

2a. **How many children (under age 18) live in the place you currently live?** _____ people

3. **What is your zip code?** _____

4. **What is the closest cross-street to the place you currently live? (ex: Old Hickory and Granny White)**

_____

5. **For each item listed below, please indicate how many there are in the place where you live.**

_____ Desktop computer _____ Tablet device

_____ Laptop computer _____ Smartphone

5a. **Are any of the devices in the place where you live shared by more than one person?**

____(1) Yes ____(2) No ____(9) Don't Know

5b. **If yes, which devices are shared?** [Check ALL that apply.]

____(1) Desktop computer ____(2) Laptop computer ____(3) Tablet device ____(4) Smartphone

6. **How many years have you used a computer in any way?** _____ years

7. **How many years have you used the Internet in any way?** _____ years

8. **How many years have you used a smartphone in any way?** _____ years

9. **Do you use the Internet on any device?** ____(1) Yes [Go to Q13] ____(2) No [Answer Q10-14, skip to Q25]

10. **If you wanted to start using the Internet, do you feel you know enough about computers and technology to be able to do that on your own, or would you need someone to help you?**

____(1) I know enough to go online on my own ____(2) I would need someone to help me

11. **How much would you be willing to pay monthly for a high-speed Internet connection where you live?**

____(1) $10 or less ____(3) $21-$35 ____(5) $51 or more
____(2) $11-$20 ____(4) $36-$50

12. **Thinking about the reasons why you do NOT use the Internet, please rate your level of agreement with the following statements on a scale of 5 to 1, where 5 means "strongly agree," and 1 means "strongly disagree."**

	Level of Agreement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	An Internet connection is too expensive	5	4	3	2	1
2.	I am concerned about my safety and privacy	5	4	3	2	1
3.	I do not have enough time/I am not interested/I don't need it	5	4	3	2	1
4.	I don't need to go online because I have someone who will do it for me	5	4	3	2	1
5.	I have no one to teach me how to go online	5	4	3	2	1
6.	Language barriers make it difficult to use the Internet	5	4	3	2	1
7.	My computer or device is too old, or broken, to use the Internet	5	4	3	2	1
8.	Using the Internet is too difficult	5	4	3	2	1

13. **Please check ALL of the following low-cost options that you are aware of.** [Check ALL that apply.]

____(1) Lifeline   ____(5) Verizon Fios
____(2) E-Rate   ____(6) AT&T Internet Basic
____(3) Emergency Broadband Benefit   ____(7) Spectrum Internet Assist
____(4) Comcast Internet Essentials

14. **If there was a way to reduce or eliminate your cost for the Internet through a government program would you sign up for it?**

____(1) Yes   ____(2) No   ____(9) Don't Know [If you don't use the Internet, Skip to Q25. If you do, continue.]

15. **Please indicate how frequently you access the Internet using the following methods.**

	Frequency	Daily	Several Times a Week	Once a Week	Monthly	Access Rarely	Don't Have Access
1.	My own high-speed Internet or dial-up where I live	5	4	3	2	1	9
2.	At work	5	4	3	2	1	9
3.	WiFi at a retail place – coffee shop, hotel	5	4	3	2	1	9
4.	WiFi at public places like a park	5	4	3	2	1	9
5.	At a friend's or relative's house	5	4	3	2	1	9
6.	At a public library using WiFi or computers	5	4	3	2	1	9
7.	At school or college	5	4	3	2	1	9
8.	Using a data plan on my mobile device	5	4	3	2	1	9

16. **Please check the item below that is YOUR best source of reliable Internet service?** [Check only ONE.]

____(1) My own high-speed Internet or dial-up where I live   ____(6) At a public library using WiFi or computers
____(2) At work   ____(7) At school or college
____(3) WiFi at a retail place (coffee shop/hotel)   ____(8) Using a data plan on my mobile device
____(4) WiFi at public place (park)   ____(9) Do not use/not applicable
____(5) At a friend's or relative's house

17. **Do you have a home Internet connection?** ____(1) Yes   ____(2) No [Go to Q22]   ____(9) Don't Know [Go to Q22]

18. **Please check ALL of the Internet service types you have where you live.**

____(1) Dial-up service   ____(5) Satellite Internet service
____(2) DSL   ____(6) High-speed Internet plan for a computer or cell phone
____(3) Cable modem service   ____(7) Other:_____
____(4) Fiber-optic service   ____(9) Don't Know

19. **How much do you pay per month for internet service?**

____(1) $10 or less   ____(3) $21-$35   ____(5) $51 or more
____(2) $11-$20   ____(4) $36-$50

20. **Have you ever been charged extra for going over your data limit for Internet service?**

____(1) Yes   ____(2) No   ____(9) Don't Know

21. **Please indicate how frequently you have experienced the following in your Internet service where you live.**

	Frequency	Daily	Several Times a Week	Once a Week	Monthly	Rarely	Never
1.	Slow or no access in certain rooms	5	4	3	2	1	9
2.	Slow access everywhere	5	4	3	2	1	9
3.	Problems connecting certain devices to the Internet	5	4	3	2	1	9
4.	Dropped Internet connections	5	4	3	2	1	9
5.	Connecting more than one device causing Internet to be slow	5	4	3	2	1	9
6.	Problems with the router	5	4	3	2	1	9

22. **Please rate your level of agreement with the following statements on a scale of 5 to 1, where 5 means "Strongly Agree," and 1 means "Strongly Disagree."**

	Level of Agreement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01.	The Internet is very important in my life	5	4	3	2	1
02.	The cost of high-speed Internet service from a cable or phone company is too high for me	5	4	3	2	1
03.	I feel like I am always searching for free WiFi	5	4	3	2	1
04.	I am interested in being able to access the Internet wherever I am	5	4	3	2	1
05.	If something goes wrong with my computer, I can usually figure out the problem myself	5	4	3	2	1
06.	Language barriers make accessing the Internet difficult	5	4	3	2	1
07.	Lack of ADA accessible devices or information make accessing the Internet difficult	5	4	3	2	1
08.	I am comfortable using computers	5	4	3	2	1
09.	I enjoy learning about new technologies	5	4	3	2	1
10.	I feel safe being online	5	4	3	2	1
11.	I can't do as much as I want online because I must share devices/internet with others where I live	5	4	3	2	1
12.	I feel disadvantaged because of a lack of access to reliable Internet	5	4	3	2	1
13.	I feel disadvantaged because of a lack of a computer or tablet where I live	5	4	3	2	1
14.	I feel that I have enough access to devices and Internet to meet my needs	5	4	3	2	1
15.	I have had negative experiences like cyberbullying or seeing racist/sexist stereotypes while online	5	4	3	2	1
16.	The government should cover the cost of high-speed internet, annually, for people who can't afford it	5	4	3	2	1
17.	I have been feeling good about the future	5	4	3	2	1
18.	I have been feeling financially secure	5	4	3	2	1
19.	I have support from family or friends	5	4	3	2	1

23. **During the past year, how often have you used the Internet for any of the following reasons.**

	Frequency	Daily	Several Times a Week	Once a Week	Monthly	Rarely	Never
01.	Find or apply for a new job	5	4	3	2	1	9
02.	Learn job-related skills (such as certification)	5	4	3	2	1	9
03.	Complete work for my current job	5	4	3	2	1	9
04.	Be part of online meetings or events	5	4	3	2	1	9
05.	Take online courses	5	4	3	2	1	9
06.	Buy or sell something online	5	4	3	2	1	9
07.	Pay bills online	5	4	3	2	1	9
08.	Look up information of any kind	5	4	3	2	1	9
09.	Attend a religious/spiritual service or event online	5	4	3	2	1	9
10.	Check or request city information and resources	5	4	3	2	1	9
11.	Apply for government services	5	4	3	2	1	9
12.	Read news / current events	5	4	3	2	1	9
13.	Entertainment such as games, TV or music	5	4	3	2	1	9
14.	Connect with friends or family using social media	5	4	3	2	1	9
15.	Buy bus passes or pay bus fare	5	4	3	2	1	9

24. **Which of the following do you agree that you feel capable of doing? Please rate your level of agreement with the following statements on a scale of 5 to 1, where 5 means "strongly agree," and 1 means "strongly disagree."**

Level of Agreement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01. Turn on your computer, log on and do basic tasks	5	4	3	2	1
02. Get and use apps, and access Internet on a smartphone	5	4	3	2	1
03. Use computer software like Word, Excel	5	4	3	2	1
04. Upload content like videos or photos to a website	5	4	3	2	1
05. Block spam or change privacy settings online	5	4	3	2	1
06. Write a work resume, post online for a job opening	5	4	3	2	1
07. Protect your computer from malware, spyware, ransomware, etc.	5	4	3	2	1
08. Create & manage a profile on a social network site	5	4	3	2	1
09. Create my own personal website or blog	5	4	3	2	1
10. Write computer code in any language	5	4	3	2	1
11. Make my own content like videos, photos, or music	5	4	3	2	1
12. Arrange travel (book hotels, flights, etc.) online	5	4	3	2	1
13. Make online appointment for a COVID-19 test or vaccine	5	4	3	2	1

25. **If you had the necessary skills/resources, how much do you agree you would want the following? Please rate your level of agreement with the following statements on a scale of 5 to 1, where 5 means "Strongly Agree," and 1 means "Strongly Disagree."**

Level of Agreement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Learn to code or work for a tech company	5	4	3	2	1
2. Start a business online	5	4	3	2	1
3. Create an app	5	4	3	2	1
4. Take classes online to learn new skills	5	4	3	2	1
5. Become a social media influencer	5	4	3	2	1
6. Create media content: ex. videos, art, blogs	5	4	3	2	1
7. Learn about tech policy	5	4	3	2	1
8. Start a tech business or a tech enabled company	5	4	3	2	1
9. Teach people how to organize online	5	4	3	2	1

26. **What kind of technology support would you be most likely to use?**

____(1) Online support   ____(2) Phone support   ____(3) In-person support

27. **What year were you born?** _____

28. **How many years have you lived in Nashville?** _____ years

29. **With which racial and ethnic groups do you identify?** *[Check all that apply.]*

____(1) American Indian/Alaska Native   ____(5) Middle Eastern/North African
____(2) Asian   ____(6) Native Hawaiian/Pacific Islander
____(3) Black/African American   ____(7) White
____(4) Hispanic/Latinx/Spanish origin   ____(8) Other:_____

30. **How do you describe your gender identity?** *[Check all that apply.]*

____(1) Female   ____(5) Agender
____(2) Male   ____(6) Cisgender
____(3) Transgender   ____(7) Gender Non-Binary
____(4) Genderqueer   ____(8) Other:_____

31. How do you describe your sexual identity? *[Check all that apply.]*

____(1) Heterosexual/straight
____(2) Homosexual/gay/lesbian
____(3) Bisexual

____(4) Asexual
____(5) Other:_____

32. How do you describe your disability/ability status? *[Check all that apply.]*

____(1) I do not identify as having a disability
____(2) A sensory impairment (vision or hearing)
____(3) A learning disability (e.g., ADHD, dyslexia)
____(4) A long-term medical illness

____(5) A mobility impairment
____(6) A mental health disorder
____(7) A temporary impairment due to illness or injury
____(8) Other:_____

33. What language is most commonly spoken in the place where you live?

____(1) English
____(2) Spanish
____(3) Arabic
____(4) Kurdish

____(5) Somali
____(6) Burmese
____(7) Vietnamese
____(8) Other:_____

34. What is/was the highest degree or level of school completed by the following people?

	Level of Education	Elementary or Middle School	High School or GED/Equivalent	Technical Certificate, 2-Year College Degree or Some College	4-Year Undergraduate Degree	Graduate or Professional Degree
1.	Yourself	5	4	3	2	1
2.	Your mother/Guardian 1	5	4	3	2	1
3.	Your father/Guardian 2	5	4	3	2	1

32. In 2020 what was your total family income?

____(1) Under $30,000
____(2) $30,000 to $59,999

____(3) $60,000 to $99,999
____(4) $100,000 or more

33. Would you be interested in signing up for a Vanderbilt Peabody Research Panel? [The Research Panel is a group of residents who agree to participate in ongoing survey research sponsored by the Vanderbilt Peabody College.]

____(1) Yes   ____(2) No

33a. If "YES," please provide your contact information below:

Name: _____

Phone: _____

Email: _____

Appendix C: Interview Protocol

Use of the interview script:

This script serves as a guide for the interviewer and is not intended to be following word-for-word. The interaction with the interviewee should be natural and conversational. The main questions should be asked but prompts under each are used as needed and appropriate to further clarify and garner more detailed information about topics. Not all prompts will be needed. While the script includes a variety of options, there may be additional questions that are necessary although not listed.

Prompts to be used flexibly depending upon content.

Introduction
> *Hello. Thank you for agreeing to talk with me (us).*
>
> *My name is_____. I am from Vanderbilt. We are working with the Digital Inclusion Taskforce to better understand the digital inclusion needs of communities across the city. Our conversation will take about 60 minutes.*
>
> *The purpose of this study is to better understand the resources available in different communities across the city, how service delivery has shifted because of the pandemic, and what needs are not being met because of the digital divide. The study also hopes to highlight the resilient ways in which communities are adjusting to the shift in service delivery, and innovative ways to reduce the digital divide in communities. It is also hoped that working with community stakeholders such as yourself will allow us to build relationships and collaborate on future work aimed at increasing digital inclusion across Nashville.*
>
> *Your participation is voluntary. You can stop the interview or decline to answer specific questions. Our reports will not identify you or any organization specifically. Our hope is to talk with several individuals associated with community organization to better understand the impact of the digital divide on technologically underserved communities. You will receive a $100 gift card as a thank you for your time and insights.*
>
> *Do you have any questions?*
>
> *Is it ok if I record our session? The recording will be used only for transcription, as I do not want to miss anything you say.*

I. **Service Information**

- Please describe the services your organization provides.

- Who is your target demographic for providing services?

- What is the profile of your highest-need client/community member?

  o What are the primary languages spoken by those you serve?

- Where do your clients/community members go for reliable information?

- How do you typically provide information to your clients/community members?

II. **Digital Inclusion/Digital Divide**

- Do you provide any services remotely? If so, which ones? If not, why?

- Do you help your clients/community members acquire devices and/or internet services? If so, where do you get them? If not, is this something you would like to do?

- From the context of your organization's work, what does the digital divide look like?

- For your clients/community members, what are the greatest challenges to internet connectivity?

- What resources are needed in your community to increase access and accessibility to internet, devices, and information?

- What opportunities, if any, have your clients/community members missed because of lack of access to internet, devices, and information?

III. **Digital Literacy**

- From the context of your organization's work, what does it mean for a client/community member to be digitally literate?

- If all your clients/community members were digitally literate AND had access to internet and devices, what services would you like to offer virtually?

- What resources would you need in your organization to support the digital literacy of your clients/community?

IV. **Network/Asset mapping:**

Who do you collaborate with as an organization? What is the focus of that collaboration? How are you sharing information about digital inclusion?

We have spent time talking about the services you provide as well as the impact of the digital divide on the communities you serve. We would now like for you to think about your most frequent and most important collaborators. Come up with as many as you can. There are no wrong or right answers.

- How would you describe the function of these collaborations (funders, other service providers, etc.)?
- Who in this group have you talked with about digital inclusion? What was the nature of those conversations?
- Has this group changed as a result of the pandemic (i.e., more/less frequent collaboration)?
- Who would you go to if you or your clients/community members had an unmet need related to digital inclusion?

I'd like to share with you a list of organizations supporting families and communities in Nashville. We know this list is incomplete, but we'd like to ask you:

- With whom on this list do you collaborate? Have any of those collaborations included discussion on digital inclusion/digital equity?
- Are there any other organizations/individuals that we have not yet discussed that you would like to mention as supporting digital inclusion in your organization or with the clients/community members you serve?

Thank you for your time and for talking with me about your organization!

Appendix D: Focus Group Protocol

Semi-structured Focus Group Protocol

Use of the focus group script:

This script serves as a guide for the facilitator and is not intended to be following word-for-word. The interaction with the focus group participants should be natural and conversational. The main questions should be asked but prompts under each are used as needed and appropriate to further clarify and garner more detailed information about topics. Not all prompts will be needed. While the script includes a variety of options, there may be additional questions that are necessary although not listed.

Introduction:

Hello. Thank you for agreeing to participate in this focus group.

The purpose of this study is to better understand digital inclusion and access in Nashville. We hope to learn how people, like you, are accessing the services and resources they need both in-person and online, and how that has changed during the pandemic.

Your participation is voluntary. You do not have to participate or answer every question. You can tell us when you'd like to stop or move on. Your name and personal information will not be used. At the end, you will get a $25 gift card as a thank you for being here and helping us.

Do you have any questions?

Is it ok if I record our session? The recording will be used only for taking notes, as we do not want to miss anything you all say.

```
  General Probing Questions:
_ Can you tell me more?
_ How?
_ When?
_ Why?
_ I don't quite understand.
_ Do you have an example of that?
_ What did/does that look like?
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Mapping Activity

We are going to do a quick brainstorm of the places, people, or things that are helpful to you based on the amount of time you spend on them. I am sending you a link to a Google document. You will see a chart that we can use to map important services and resources in your life. First, we want to start thinking about people, places, or things that are helpful that you spend time with/in every day (week, month, year). Write the name and location or description (information we would need to identify the location) of each place on the daily section of the chart. Come up with as many as you can. There are no wrong or right answers.

a. 2-3 mins daily
b. 2-3 mins weekly
c. 2-3 mins monthly
d. 2-3 mins yearly
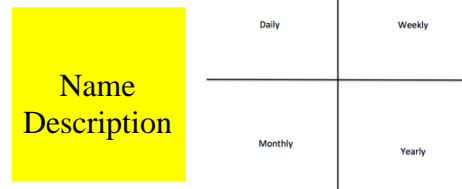
Consider services and resources in these categories:

Education (schools; colleges; universities, tutors, after-school programs)

Housing/Transportation (housing support services; buses; public transportation)

Work/Financial (jobs; employment agencies; vocational education, banking)

Healthcare (doctor's offices; hospitals; clinics)

Lifestyle (shopping; hair-dresser; restaurants; entertainment; sports/fitness; groceries)

Social services (government offices; libraries; parks)

Religious/Spiritual (church, mosque, synagogue, meditation)

Cultural Spaces (cultural traditions, dance, music)

Other people, places or services that are important to you

- Has your use of services/resources changed as a result of the pandemic? If so, how?
    - Are there services/resources that have changed during the pandemic that you would like to see continue as they are now?
    - Are there services/resources that have changed during the pandemic that you would like to see go back to the way it was before the pandemic?
- In addition to the pandemic, Nashville has been hit by a number of other disasters - from the tornado to the recent bombing. How have these different events affected your access to or use of different resources or services?
- Where do you go to get support and resources? Are these supports and resources enough to meet your needs? Are you able to consistently get these resources?
- Is there a need that you feel is not being met in the community? For instance, is there a service you would like a non-profit to add?

Digital Access
- What do you think about when you hear the word internet?
- Do you use the internet?

If no:
- What are your reasons for not using the internet?
- Would you like to use the internet? If so, how?
- Do you have family or friends who access the internet for you? If so, how do they access the internet for you?
- Where do you get your information? Who do you consider a reliable source?

If yes:
- What devices do you use to access the internet?
  - Prompts: cell phones, tablets, laptops, watches, gaming devices
  - In what ways do you use these devices? Prompts: for work/school; apps; entertainment; news/information; shopping; telehealth; social networking
- How do you access the internet?
  - What internet service providers are you aware of?
  - What has been your experience with internet providers?
- Do you access devices/internet services in public spaces (libraries/coffee shops)? What has been your experience been like?
  - Are there other places you access devices/internet? If so, what are they?
  - Are you still going to these public places for internet during the pandemic? If so, how was the space changed?
- Has your use of technology changed as a result of Covid? If so, how?
- What are some of the challenges for you in accessing online services/resources?
  - Potential prompts: access to devices, internet connectivity, financial resources, language barriers; quality of devices
  - Do you share devices/internet with others? How has this impacted your ability to access digital resources/services?

Digital Literacy
- What does digital literacy mean to you?
  - Do you look for information online? If so, what kind of information?
- What skills do you feel you have related to digital literacy?
  - Have you had any training/classes to increase your digital literacy? If so, what were they?
  - If not, why not?
- What skills would you like to learn or develop further?

Digital Support
- If you have a question about accessing information online or using your device, where do you go for answers?
- What kinds of technology support would you be most likely to use (online supports, phone support, in-person support – friends/family)?

- Have you had negative experiences online? If so, did you receive any support to address those experiences?
    - Has this or other experience affected your mental or emotional health (If needed, substitute for "feelings")? If so, in what ways?
- How has the new reliance on technology affected your mental and emotional health? affected your general well-being; feelings – problematic for refugee groups
- Do you have questions about the safety of your data? If so, what are they?
    - Have you ever had any training around keeping your data safe?

Visioning questions:

So far, we've talked a lot about the present. Now, we'd like to discuss the future...

- How do you think about solutions to the digital divide like providing WIFI on school buses? WIFI Lift Spots? Or making WIFI a utility?
- If you had access to all the devices and resources you needed, how would you imagine you would like to use technology?
    - How would having to access make you feel? How do you think your community would feel?
        - What does that feeling look like?
    - What services/resources would you like to be able to access virtually?
    - What hopes do you have in terms of technology use?
        - What do you think you would you need to make that vision possible?
- What hopes for you, your family and your community do you have in terms of access to technology and the Internet? How can we increase access to the things we actually need based on these hopes?
- Without limitations, what joy do you think your community can get from technology? What does it look like? Feel like?

Appendix E: Links to Additional Tables and Figures

Links to additional tables and figures can be found here:

https://docs.google.com/presentation/d/1ixLbTyKz7qQQVQbppLQCaRaBqAK7fho4HWDtqtea
vhg/edit?usp=sharing